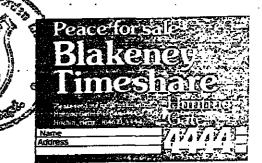
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BUSINESS

act on

trade

barriers

Minister said. Back Page

3 JAPAN will take "drastic"

action soon to remove non-tariff

barriers to trade, its Interna-

tional Trade and Industry

EMS January 15, 1982

ECU DIVERGENCE

The chart shows the two constraints on European Monetary System exchange rates. The upper grid based on the weakest currency in the system defines the cross rates from which no currency

lescept the heat may move more than 2's per cent. The lower chart gives each currency's divergence from the central rate, against the European Currency Unit (ECU) uself a basket of European currencies.

tion ruinours were strongly

deried by the Government in Brussels last week. The currency remained the weakest

member of the European Mone.

tary System, but was well with

in its alarm bell divergence limit. The D-mark and lira

with the lira finishing as the second weakest EMS currency,

sughtly below the German unit,

interest rates followed the rise of the Dutch guilder to the top

of the system, but French

rates tended to rise on Friday

as the franc weakened. On

Thursday Paris call money was

equal to the lowest level since

ernment-backed sports car com-

Guarantee Department will grant it \$60-\$70m in finance

@ BUDGET will introduce tax

relief for companies investing

in Britain's depressed and de-

clining inner cities. Back Page

O LEAK of the Monopolies

Commission decision on the

Bank of Scotland is to be

investigated by the Government.

O CAR TRANSPORTER com-

namies are expected to face a

Monopolies and Mergers Com-

mission inquiry soon. Page 3

@ UK COMMERCIAL VEHICLE

production should jump by nearly 30 per cent this year

O MINERS in South Wales vote

tomorrow on the Coal Board's

9.5 per cent offer. Bad weather delayed the ballot, expected to

hold the key to the outcome

ings claza in South Wales which

the commany intends to close

voted to continue their occupa-

@ ICL'S managing director calls

nationwide. Page 5

payments. Page 5

1981's denressed levels. according to the Economist Intelligence Unit. Page 3

Editorial comment, Page 12

takeover battle for the Royal

cuarantees. Back Page

Mitterrand in May.

he election of President

An easier trend in Amsterdam

The D-mark and lira limit. The D-mark and ura changed places several times.

Japan to

GENERAL Looters 'threat to flood homes'

flooded by the thaw could become a target for Jooters, police said, as plumbers. local authorities and emergency services struggled to cope with floodwater.

The North West Water Authority said the situation would be even worse when industry started again today and more burst pipes were discovered.

In Wales, where some areas are still cut off by snow, a row has crupted between the Welsh Office and the Government over special aid for the emergency.

Councils claim they will have to spend three times as much as they were bargaining for before getting aid and are seeking a meeting with Welsh Secretary Nicholas Edwards, Weather, Back Page

3m jobless likely

Employment Secretary Norman Tebbit said it was likely unemployment would top 3m this mouth and would go on rising through the first part of this year Back Page

TUC cautious

Confidential TUC paper dis-closes that Congress House is taking a cautious view of mililast proposals put up by hig urions on the Government's O BELGIAN FRANC devaluanew labour relations legisla-Back Page

Sinai talks

Israeli Defence Minister Ariel Sharon started a visit to Egypt to discuss detailed plans for Israel's final withdrawal from Sinal Page 2

Sinn Fein arrest

Danny Morrison Provisional Sinn Fein publicity director, who was sent to Canada to counter the Rev Ian Paisley's anti-IRA campaign, was arrested at Toronto airport.

U.S. missile test

Trident submarine, fired its first @ DE LOREAN, the UK Govmissile while cruising submerged off Cape Canaveral in pany, expects to hear today the U.S. Air Force's eastern whether the Export Credits test range.

Fatal cast

Paul Hurst, 14, of Gateshead. died on a fishing trip when he was struck on the head by a four-ounce lead sinker on a line east by another angler.

Finland votes

Finns hegan voting in the first stage of finding a successor to Urho Kekkonen, the country's ninth President, who resigned last year because of all health.

Divers killed

Five U.S. Navy divers died in an airlock accident aboard the submarine Grayback after a training exercise off the western

Gone fishing

Some 60 Hull and Grimsby trawlermen are going to New Zealand to crew two of Britain's biggest (rawlers-sold because of the decline in fishing oppor-

tunities. Page 4

Briefly . . . Billingsgate fish market moves London's West India docks. Gang hoss Raffaele Ferrara was arrested by Naples police in their fight against the against the

Neopolitan Mafia. for massive expansion in Gov-England's cricketers were 307 ernment spending on the com-puterisation of public services for six a' the end of the fourth day of the Fifth Test against in today's special FT supple-India in Jadras.

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French to rewrite Nationalisation Bill after legal setback

No. 28,676

THE FRENCH Government will five weeks." parts of the Bull.

The council's ruling, on Saturday night, was the most serious setback for the Covernment's economic strategy since President Mitterrand was elected in

Aithough the council, the supreme arbiter on constitu-tional issues, approved the basic principle of the tallcover protramme, it turned down several clauses, particularly to do with the way shareholders are compensated.

Its decision has the effect of holding up the law under which the Government is to take over five top industrial groups, the larger privatesector banks and the country's two most powerful helding companies. It will also substantially increase the cost of the pro-posed nationalisation.

The rejection of the compensation clauses - which the council said were not separable. from the overail text — forces the Government to go back through Parliament.

M Jean Le Garrec, Secretary of State in charge of the nationalisation programme said

today take urgent steps to pre-pare new terms of compensation for its controversial Nationalisa-neeting of the Socialist parliation Bill, after the country's mentary party tonight, in a race Constitutional Council rejected to get new compensation clauses ready for Cabinet approval on Wednesday. Before then, they must be seen by the Council of

> The current special session of Parliament, due to close at the end of this month, is expected to be extended to make room for a debate o new compensation articles.

The Government had hoped to promulgate the law in the next few days. Chairmen would have been named to the newly nationalised companies on Wed-The council, to which the law

had been referred by opposition members of the National Assembly and the Senate, accepted the Government's right to nationalise all the com-panies on the list, its method of payment with long-term state honds, an dits exemption of foreign-controlled banks.

This puts to an end the threat or mationalisation over foreign banks — including the French Barclays subsidiary — whose deposits were over the minimum threshold applied to French hanks.

Last autumn, the Government ignored a recommendation made by the Council of State, a conyesterday he hoped the delay by the Council of State, a con-could be trimmed to "four or sultative body, that these banks

should be included to avoid dis-

crimination.
The Constitutional Council. made up of nine appointees and exercising independent powers, rejected six articles and one paragraph of the Bill which the National Assembly finally voted month ago.

The decision, published vesterday in the Official Gazette, is much tougher than the Government had been expecting and cannot be appealed against.

The council said the final compensation formula — based partly on historical share prices, partly on profits and assets - was unconstitutional because of the way share values were calculated and be-cause shareholders were not being paid dividends for 1981. It also overruled a clause

allowing chairmen of nationalised companies to sell off overseas shareholdings at their discretion. This clause was seen as a precaution in the event of legal clashes over the nationalisation of interests out-

side France. • Last, it rejected the exemption of banks owned by cooperatives from the nationalisation scheme. This decesion, it was made clear yesterday, does not affect the main co-operative banks such as

Continued on Back Page Delay will be keenly felt by Mitterrand, Page 2

Hopes of solution to rail dispute hinge on Acas

LONG-SHOT solution to the rail confirmation was being canva-sed last night whereby British Rail would pay its train drivers the disputed 3 per cenin return for rapid negotiation and binding internal arbitration on the productivity issue. The plan seems to depend on

a move, possibly inday, by Mr Pat Lowry, chairman of the Advisory, Conciliation and Arbitration Service, BR officials hope he may be persuaded to take soundings with the Asso-Engineers and Firemen (Aslef). difficult to disfionour.

Even if the plan works, there seems little chance of presenting the drivers from striking again on Wednesday and Thursday. Aslef leaders, onlstered by the verdict of Mr Len Murray. TUC general secretary, last Friday that BR is in the wrong. are digging in for a fight to the

They will meet tomorrow to

Meanwhile the BR operd also meets tomorrow. At the least, it is likely to decide that if near Sunday's strike coes ahead to will not pay the rest of the railwaymen even if they turn up It can do this secause Sunday work is paid at overtime second-stage

British Pail expects to be operating commuter trains in all areas by 6 am today. But the service will be patchywith only half the commuter trains expected to run on the London-Midland Region into Eusion, St. Paneras and Marylebon. Inter-City services will be reduced.

rates and is not covered by the ugrusment-a guarantee of fallciated Society of Locametive ligel; pay that it would be legally

-BR had hoped that Mr Murray and Mr Lowry between them could sell the peace plan to Aslei. Now the plan depends on whether Mr Lowry feels able to put Acas's neutrality at risk taking the initiative when Aslef says the industry's own procedure has been ignored.

Yesterday Mr Clifford Rose. discuss stepping up the action ER member for industrial in various ways and possibly relations, said it would be "sencaffing a total strike." in talk to Acas again. and BR would respond to any overtures.

The dispute is over pay and productivity "understandings" strike. BR says a 3 per cent

depends on prior commitments by the unions to accept flexible rastering-variable shifts of seven and to nine hours instead of the present normal eight. If BR agreed to put the issue

to the Railway Staffs National Tribunal, chaired by Lord McCarthy of Oxford University, would be taking a gamble. In the past the tribunal has defended the unions' eight-hour

Aslef claims to have solld support from its 27,000 members and sympathy from many railwaymen belonging to the National Union of Railwaymen despite the NUR's readiness to sign the flexible rostering agree-

Last night, Mr Bill Ronksley a senior Aslef executive member, warned that the rail dispute could develop into a wider conconfrontation between the unions and the Government.

Calling Mr Murray's intervention a "very important contribution that put the whole thing in perspective," he added: "I think myself it is now clear that this is not just a question of productivity, but of Parker reached at Acos last August in and the Board going out to time to prevent a national destroy Aslef. There is a feelaward Government orders.

De Beers blocks UK statistics on Soviet diamond shipments

BY DAVID MARSH

DE BEERS the South African O DUNLOP Group's 600 wormining company which dominhers at the Semiex floor cuverhas blocked publication by the British Government of sensitive shipments of tion in spite of an ultimatum to quit the site or lose severance diamonds from the Soviet Union to London.

Under the move, which affected Britain's trade statistics from the beginning of last year. the Government is no longer providing figures on clandestine shipments of Soviet dismonds to Lundon, where they are sold through De Beers' worldwide

The link in diamond mirk to ing between two countries at apposite ends of the international political spectrum has been known for years. But it is not formally admitted by either side, and is a subject of consideralde embarrassment purticularly for the Russians.

The move effectively wraps another layer of secreey around the highly descreet international trade in gold and diamonds, when the Soviet Union is struggling hard to raise funds in the West by boosting gold-

South Africa and the Soviet have been hard hit during the past year by weak prices. Last week De Beers announced a 46 available because at the becomper cent drop in diamond sales (172 6, 1981 Britain's Departto try to steady the market.

Britain's Customs and Excise sent to London for transshipadmits that Do Beers asked for ment. ates world diamond marketing, the diamond statistics to remain unpublished and that it agreed

> In the 1970s the British Government took action to block statistics on gold imports. into the London market, partly in response to Russian complaints made via the London reason. bullion dealers. The guarantee of discretion

in London, together with some lessening of anonymity in Zurich, the rival trading centre. contributed to a Soviet decision last year to switch some gold chipments to Britain instead of Switterland,

Mospow's deliveries to London have mainly been rough (unpolished) stones which are passed on via a third party to De Beers and then sold through Central Selling Organisation. The CSO handles the marketing of about 80 per cent of the world's diamond production.

Russian shipments to the UK run into several ormaily bundred million pounds a year. Bedeeting Soviet foreign exchange shortages, the deliveries are thought to have commued Union, the main world are all a high rate last pear in spite ducers of both commodities, of the weakness of the diamond market.

Ent no proper figures are dishing figures for Russian goms changed statistical coverage.

The Department defended

the action-which affected all diamond exports and imports for last year-on the grounds that it removed a distortion of the trade figures. It also made a similar move on aircraft shipments last year, for the same Asked to provide the missing

figures, the Customs and Excoise—which is responsible collecting the figuresdeclined to do so because it would identify the trading position of De Beers. trader was consulted (about the possibility of publishing the figures) and turned it down, the Customs and Excise said last week. For several years up to 1980.

Russian diamond shipments to London made up the lion's share of imports from Moscow under the Trade Department's opaque heading "non-metallic mineral manufactures," came to £202m in 1978 (out of imports from the Soviet Union of £688m), £335m (total in 1979 and £367m (total £7Som) in 1980. Last year, however - for

which only four months' figures are available because of which the civil servants' dispute the identified imports drupped dramatically to only about last year as it built up stocks ment of Trade stopped pub- £100,000 a month because of the

Walesa 'will be set free soon'

By Our Foreign Staff

MR LECH WALESA, the MR LECH WALESA, the Solidarity leader will be released from detention "in the very near future," Mr Stefan Staniszewski, the Polish ambassador to Britain, and Vester 1989. said yesterday.

Mr Staniszewski, told re-porters at Heathrow Airport : "I cannot tell you the exact date, but it will be soon. The decision has been made."

The amhassador was greet-ing his wife, who had flown in from Warsaw. He said he had "just been told from Warsaw" of the "good news about Lech Walesa." reports Other

Warsaw, however, saggested that hard negotiations are continuing over Mr Walesa's release, and that he is still insisting he will not talk to the Government without the rest of his Solidarity presidium, all of whom are interned or in hiding.

But there were indications

that the Church, in the person of Archbishop Jozef Glemp, the Polish Primate, may be putting pressure on Mr Walesa to start negotiations with the Government without all his demands being met

In an interview with Reuter in Warsaw, Senator Larry Pressler, the only senior U.S. politician to have visited Poland since martial law was declared on December 13, said he "got the impression that the Primate was being critical of Mr Walesa's intransigence." Mr Pressler said Archbished to Mr Walesa twice referred to Mr Walesa as an "inexperienced politician." who "had not been long in politics and did not know how complicated things are "

things are."
Mr Pressler said: "The Polish Primate told me that Mr Walesa is expecting the Communist Party to go down on bended knees and apologise for what happened." The

Archbishop was extremely anxious to get serious negotiations under way again and was worried that if this did not happen there could be civil war. The Archbishop told Mr

Pressler, who is chairman of Peace" sub-committee, that there were radicals on both While he criticised General Wojciech Jaruzelski, be also implied that there were tougher and more extreme men waiting in the

Polish loyalty pledges may stop, Page 2

Ronson soldiers on in attempt to control ACC

BY JOHN MOORE

man of Heron Corporation, is pushing ahead with his campaign to wrest control of Associated Communications Corporation, the entertainments empire headed until last week by Lord Grade, from Mr Robert Holmes à Court, the Australian entrepreneur.

Mr. Ronson today meets bankers and lawyers to discuss his next move after a threehour meeting on Saturday with Mr Holmes a Court at which Heron's indicated £42.5m offer

for ACC was discussed. Yesterday, Mr Ronson said: "I am not walking away. I to support payment of the conc-thrive on aggravation. There pensation, are a lot of options open to us. Because of other action by ACC has good businesses and we are prepared to pay a price."

ACC and Mr Holmes à Court. whose master company, the Bell Group of Australia, has launched an agreed bid of £36m for ACC, has already snubbed

last week's approach from Heron Corporation. The stumbling-block over last week's approach by Heron was its insistence that before making its £4.2m offer it would need to mount an investigation into the company's affairs taking seven

But ACC and Mr Holmes à Court told Mr Ronson and his advisers last Wednesday that if Heron were to make an offer it would need to do so by midwithout conditions aignt, attached.

Heron was also expected to guarantee net debt at ACC of £50m, but before doing so, wented more information about the group's affairs, and in any event was not prepared to do so before it took the company

It is understood that one or two lending banks have expressed concern about the position and the recent City rows and controversies surrounding the company, although it is not thought that any loans have been called in. Mr Norman Ferguson, invest-

ment manager of the Imperial Group pension fund, an institu-tional shareholder in ACC voting shares, expressed annoy- Independent Television. for ACC by Mr Holmes a Court. holding. 'If it is impossible to thwart next move will be to see whether he can do something with the company tee, plan to meet this week to

discuss the developments. Tomorrow, legal representa-tives of five ACC directors—

MR GERALD RONSON, chair-man of Heron Corporation, is Mr Norman Collins, Mr L. S. Michael, and Sir Lee Plintzky
—as well as Mr Holmes & Court appear in court to defend an injunction sought by Mr Jack Gill, the group's former man-aging director.

His action against the ACC directors has been brought to ensure that he eventually re-£560,000 in compensation.

The five directors signed inundertaking at a meeting of the ing shareholders to pledde their voting shares, topresenting 45.3 per cent of the total

institutional shareholders, who are seeking to block Mr Gill's payment through an injunction in the courts, the resolution for approval has never been put to shareholders at a meeting.

Mr Gill has now brought his action to prevent the shares of the directors named in the action from passing to Mr. a Court as part of the hid deal. and to stop Mr. Holmes a Court from registering the shares.

If the injunction is arouted it could prevent the bid by Mr Holmes a Court from going unconditional until the compensa-tion question to Mr Gill is resolved. That will not take place until the outcome of the legal action of the institutional shareholders is known. The institutions are going

back to the courts on January 26 to seek a continuance of their interim injunction antil the case comes before the courts in mid-

February.

It is understood that the service agreement of Lord Gradehas been renegotiated by Mr. Holmes & Court. Should be retire or leave the group at any time, he will become entitled to a pension of around \$45,000 to £46,009, and will be allowed to buy his home in London at cost. His substant is thought to have been reduced from the £203.630 shown in the last

Mr Holmes à Court is understood to be actively considering the future ownership of Center! ance yesterday about the offer which ACC has a 51 per cent

The Independent Broadcast-Mr Holmes a Court's control of ing Authority has frozen ACC's of Central unfil the outcome of the bid is known and will and make it worth more than require ACC to reduce its hold-the Ronson offer." Representating wholly or in part once the tives of the pension funds who deal goes through. He have formed a special commitresident, is disqualified by law from controlling a television francise in the UK.

Men and Matters, Page 12

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THENEW COMPUTER FOR ISINESSES **CANTAFFORD** TO PLAY GAMES.

Nowadays business computers can cost you anything from under £100 to tens of thousands. Naturally you can expect to get what you pay for. The Olivetti 2099 is a highly professional business computer at a very competitive price.

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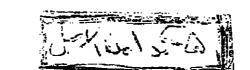
The 2099 also offers you advantages many: other computers simply don't have: speed; better management information; and the backing of a nationwide network of sales, service and software centres. The Olivetti 2099 is the purely professional

business computer designed to handle all your accounting problems. If you are not prepared to compromise









BY ANTHONY McDERMOTT IN CAIRO

Defence Minister, arrived in a population centre. Cairo yesterday for negotiations will concentrate on the details of Israel's final withdrawal from Sinai.

There are signs that lastminute hitches could develop over the removal of Israehi equipment and the status of two islands at the entrance to the Gulf of Agaba.

Egypt is demanding that the withdrawal should be completed on schedule as agreed in the Camp David accords and the peace treaty with Israel.

The daily newspaper Al-Gumhouriya has been recording the countdown to the with-drawal on its front page. Yes-terday, it said: "After 97 days, Israel withdraws from Sinai." Mr Kamal Hassan Ali, Egypt's Foreign Minister, was quoted vesterday as saying that not one Israeli would be left in Sinai on April 26, the day after the

withdrawal is to be completed. This presumably was a retort to a statement by Mr Sharon January 15 that he would ask Egypt to be flexible over Egypt that they would not be the deadline because some returned to Saudi Arabia. equipment needed dismantling.

leave behind anything which islands.

MR ARIEL SHARON. Israel's might be used as the basis of

Another problem has arisen over the status of two islands-Tiran and Sinafir—which lie at the mouth of the Gulf of Aqaba at the head of which lies Eilat. Israel's sole southern port. The blocking of the Gulf helped to precipitate the 1967 war. The two islands are under

Saudi sovereignty, as State Department officials in Washington recently acknowledged, but were leased to Egypt in 1954. They have twice been captured by Israel in fighting with the Arabs in 1956 and

newspapers . have Israeli reported that Saudi Arabia in tends to reclaim these islands after their return to Egypt. Egypt maintains that under the terms of the 1979 peace treaty they would be patrolled

by Egyptian civilian police. Israel, which has had border difficulties with Saudi Arabia and is also concerned about the build up of military equipment in the Kingdom, is asking for a commitment from

Israel is also asking that the He was referring to equip-international peace-keeping ment near Israel's border, and force being set up to patrol said that Israel did not want to Sinai, should be placed on the

General Mustafa Tlas, the

would remain in Lebanon inde-finitely. Syria and Israel came

close to war last summer when

But the main focus of Arab

• The present soft market for

crude oil is likely to continue

into the second half of this year,

according to Sheikh Ahmed Zaki Yamani, Saudi Arabia's Oil

Sheikh Yamani said in an

interview with the Middle East

Economic Survey that he had

changed his view that a balance

between supply and demand

quickly enough.

Arabs intensify war of words over U.S. policy

BY OUR FOREIGN STAFF

ARAB LEADERS intensified Lebanon. their attacks on U.S. policy in the Middle East during the Syrian Defence Minister, was weekend, accusing Washington reported yesterday as saying of supporting Israeli plans to that Syria's anti-aircraft missiles a fresh military

The attacks came after a visit to the region last week by Mr the missiles were moved into Alexander Haig, the U.S. Secrethe Bekaa valley. tary of State, who discussed in Cairo and Jerusalem ways of anger appears to be directed at reviving the stalled talks on the U.S. refusal to take any

Palestinian autonomy. action over the annexation of Mr Chedli Klibi, secretary- the Golan. general of the 22-member Arab League, said yesterday that rela-tions with the U.S. were "in He accused Washington of backing Israeli military aggression and denounced "America's unqualified thwarting of effective sanctions against Israel for the annexation of Syria's Golan Heights."

Syria's determination to confront Israel appears to have been strengthened by the visit to the Soviet Union of Mr of the year because the U.S. Abdul-Halim Khaddam the economy had not recovered Foreign Minister, on Thursday and Friday. Apart from con-demning U.S. policies they may be an extension of the announced a further strengthen-present price freeze or "a small

ing of relations, One of Syria's aims has been consideration part of the effect to win Soviet approval for an of inflation." He also said there extension of the treaty between might be room for further the two countries to cover the reductions in the price of 30,000 Syrian troops based in medium and heavy crude oils.

bulwark against Soviet expansion in southern Asia. Gen Zia is accompanied by six members of his Government including Mr Aga Shahi the Foreign Minister. He is expected to press the Italian Government for economic and humanitarian aid to help cope with an estimated 1.5m

also be requested to step up general financial and military Gen Zia is later to visit omania, Yugoslavia and

Emergency ends

A state of emergency, imposed in Sri Lanka five months ago hy President Junius Jay-wardene. has been lifted, Reuter reports from Colombo. The emergency was declared to enable the Government to deal with violence between th majority Sinhala and minority Tamil communities.

President Zia: seeking further

four-nation

PRESIDENT ZIA UL-HAQ

of Pakistan yesterday arrived

in Italy at the start of a visit

to four European countries,

Rupert Cornwell reports from

Rome. The purpose of Gen Zia's tour is to bolster sup-port for his regime as a

Afghan refugees. Italy may

Zia starts

tour

India strike warning

India's Home Minister, Mr Zail Singh, said last night that a one-day general strike called for tomorrow was politically motivated and an attempt to weaken the Government, Reuter reports from Delhi. The strike has been called by some opposition groups and trade unions, partly in protest against new powers enabling the Government to ban strikes in essential

Philippine officials are investigating an attack on a After 1982, he thought there Japanese chemical tanker by two unidentified fighters, east of Mindanao island, AP reports from Manila. The increase which would take into incident is reported to have occurred on Friday when the Hegg, 5,307 tons, was en route to Pusan, South Korea, from Singapore

FRENCH NATIONAL PLANS

Delay will be keenly felt by Mitterrand

BY DAVID WHITE IN PARTS

AFTER six months of gestation. marked by a long, complex and bitter debate, the third sweeping nationalisation programme in French history was to have compensating shareholders by authorities' interpretation of seen the light of day this week. giving them long-term state Instead, the forecast, now that the Constitutional Council has had its say, is for a fresh has been challenged. The Govthe Council has not asked for

going back.' But large question marks now have to be put against two aspects of the Bill, which the National Assembly approved a alisation programme is not week before Christmas: its cost affected by the Council's deciof the compensation terms, and

its timing.
It is doubtless the delay which could be months rather than weeks—that the Govern-ment feels most keenly. The enlarged public sector is crucial to the Government's ambitions for growth and employment. Putting a brave face on it, on several key points. The the Government can at least Council accepted, besides the

None of the names on the list, period of uncertainty. An ernment can therefore go ahead abortion is out of the question; with nationalising the five industrial groups, the 36 banks one, and President Mitterrand's and the two giant holding com-Government has made it panies Compagnie Financiere absolutely clear "there is no de Suez and Compagnie Financiere de Paris et des Pays-Bas. which have powerful stakes in both banking and industry.

The remainder of the nation

week before Christmas: its cost affected by the Council's deci-which will certainly rise as a sion: the acquisition of majority result of the Council's rejection stakes in the two arms groups, Matra and Dassault (already a fait accompli), and the renegotiation of arrangements for three groups in which foreign multi-nationals have the biggest shareholdings (which is still

> Opponents of the Bill, in Parliament and outside, have lost

Council has let pass the main alise the setting of a threshold was earlier forced to drop a political aspects of the Bill, as for banks on the list (deposits clause providing for the sale of well as the basic method of of FFr 1on and over) and the some interests back to the orilaws regarding equality of treatment and extra-territreatment

toriality. The Government is challenged on three points, two of them relatively minor. It wanted to exclude co-operatives from the banking takeover. The Council says it must, to be fair, nation-

correspond to the other banks

being nationalised. This is expected to involve adding three banks to the list: Banque Fédérative du Crédit Mutuel (a subsidiary of the large Crédit Mutuel group), Banque Centrale des Co-opérative et Mutuelles and Banque Francaise du Crédit Co-opératif.

As a precaution in case foreign partners created trouble, the Government had put in a clause giving chairmen of nationalised companies discretionary powers to self off holdings in foreign companies, This has now been barred, in the

The Council's decision probably means that the Government would have to go through Parliament to sell any of these in-

The big problem is compensation and is made worse by the lack of any alternative suggestion from the Constitutional alise co-operative bodies that Council.

The Government already adjusted its formula in September, bowing to the opinion of another official non-Government body, the Council of State, which has purely advisory powers. Improving its conditions for compensation—includ-ing in the basis for calculation not only past share prices, but also past profits and nonconsolidated assets-it decided in exchange not to pay dividends for 1981.

Criticised for this, for not making provisions for inflation (the base years for share prices and profits being 1978, 1979 and

pride itself on the fact that the Government's right to nation- same way that the Government 1980) and for not including Government now has to go to the drawing board.

The payment of 1981 dends alone is expected to between FFT 1.50m is for the compensate bill, estimated by the God ment at FFr 28bn (£2.4. including interest paym

under the original formula The Constitutional Co. y demanding a fur-improvement, has exposed by to a row about its role at institution and about the ciof its members, appointed in mine year terms by the R dent and the Speakers of two Houses of Parliament.

After the Government of a new compensation for through Parkiament the nothing to stop the oppos referring it again to the Co for a final verdict on with the law fits the 1958 contion. The Government this time almost certainly ICII for an urgent one-wack deep II that decision wast again even greater actionally is highly him.

Early talks

on one-part

Zimbabwe

By Our Salisbury Corre

ZIMBABWE's Prime Min

Mr Robert Mugabe, reaffe

his intention at the weeker

pressing ahead with the el

lishment of a one-party s

He also repeated his Go

"Zimbabweanisation" of

Government planned to adj

Mugabe was speaking in \$1

and his remarks were repo-

in yesterday's Sunday

Speaking near Salisbury Saturday, Mr Mugabe said

greater control of the min 1000 clindustrial and farming section 2

thereby ensuring inche involvement by blacks.

commitment

Polish loyalty pledges may stop

BY CHRISTOPHER BOBINSKI IN WARSAW

THE POLISH authorities may stop forcing people to sign loyalty pledges as a condition for keeping their jobs, according to officials of the Church.

Speaking in a Warsaw church over the weekend, Archbishop Jozef Glemp, the Polish Primate, again attacked the Government policy of extracting pledges. He also expressed concern that arrests were continuing. "We hear about further arrests when there are so many people interned awaiting release," he said.

He appealed for unity in the nation and a "change of heart" to make that possible. "The Church wants to bring our nation together." At today's meeting of the

the first due to be held since

martial law was declared, the government's agreement to drop its policy on loyalty pledges would be construed as a concession to Church demands. But the military government is not expected to extend its con-

BY OUR FOREIGN STAFF

reviewing its decision

reported.

THE POLISH Government is

increase the prices of essential

goods and services by as much

as 400 per cent and may also

The Pope has condemned the division of Europe at Yalta into two post-war spheres of influence whose shadow lies over the military clampdown in his native Poland, writes Rupert Cornwell in Rome. Although the Pope has

emphasised the

full sovereignty, this was the administration, where trade union membership has been forbidden. A legal and binding professional code for the civil service may be drawn amounting to a loyalty

nations—not only Poland—to

It remains to be seen, in any case, whether the government's Church-State mixed commission, promise to drop the insistence on pledges will reduce victimisa-tion of Solidarity supporters. The Church-State commission is headed by Cardinal Franciszek Macharski, Archbishop of Krakow, and Mr Kazimierz Barcikowski, a member of the Politburo and one of General

to the planned rises.

the existence of martial law, the

Government is mindful of the

The economic committee de-

directly the existence of two opposing blocs in Europe. His comments were coupled with harsh criticism of the

first time he had criticised

military regime in Warsaw. In his traditional audience for foreign ambassadors to the Holy See, the Pontif said Poland was in "a state of

civilian advisers.

The resumption of meetings at this level suggests that the Church-State dialogue, which has continued with difficulty since martial law was imposed, may be returning to traditional, more effective channels.

Another sign that relations between the two sides are returning to normal came yesterday when Polish state radio resumed regular broadcasts of Sunday mass. The broadcasts, which were one of the concessions granted to the church after August 1980, had stopped with

The Government originally

stated on December 31 that the

prices of food, consumer goods

and services would increase two-

fold to fourfold. Sugar, for ex-

ample, was to rise by over 400

According to PAP, the pro-

the priest quoted from the letter of Romuald Trangutt executed as a leader of the 1863 uprising against Tsarist Russia Meanwhile, Poland's troubles have been compounded by the flooding of 24,000 hectares of

In addition, the party newspaper, Trybuna Ludu, said over the weekend that sales of grain by farmers to the state had not risen appreciably in the last

• A further indication, albeit symbolic, that the government is striving for a return to surface normality, is the decision to allow the army's guard of honour to parade yesterday in traditional four-cornered hats. The four-cornered hats were

part of Polish army uniform in the last century and survived until they fell victim of Warsaw Pact uniformity and made way for rounded hats. The return to the old style for the Sunday changing of the guard at the monument to the unknown the introduction of martial law. soldier is a modest gesture to

versy. The head of the state

price commission said that, by

would get pay rises averaging 1,200 zloty (£8) a month on salaries averaging 7,700 zloty

A Government economist,

Professor Zdzislaw Sadowski, saying that no final decision had

yet been taken on the pay rises.

(£55) a month.

way of compensation, workers

merce and industry we have real power," he said. Part of his programm. national transformat would be to discourage business from making huge

and of the workers. The Government wante achieve a position in warmore businesses were run by workers but, Mr Mugabe We will not take busines force. We will buy whateve.

take over. Where organisations taken over they would handed over to the worker. At another rally yesterday Mugabe announced that level talks would take I

The government's economic clared after its meeting: "It is posed system to compensate for urged the Government not to be committee, presided over by Mr generally considered that the the increases had caused contro-WORLD TRADE NEWS

change its proposed system of violent unrest caused in 1970

compensatory pay rises. "The and 1976 and threatened in

changes will be presented to the public as soon as possible," the increases, especially in essential

KWU looks set for £190m generator deal with S. Africa

BY BERNARD SIMON IN JOHANNESBURG

of Siemens AG, has signed a and turbine orders totalling letter of intent with South Africa's Electricity Supply Comcost of R350m (£190m).

The generators are for the new Kutala power station to be

built at Kendal, 80 miles east

have to be taken on the propor- contracts.

KRAFTWERKUNION (KWU) The Kutala turbine contract tion of local content.
of West Germany, a subsidiary is the last of a series of boiler German banks are likely to almost R4bn placed by Escom The Bonn Government has over the past two years for four lifted restrictions on export Africa's Electricity Supply Commission (Escom) for six 600 Boilers for the Kutala station. Africa to enable German common of R350m (£190m).

Engineering of the U.S.

Engineering of the U.S.

Engineering of the U.S.

Division for the control of the U.S.

Engineering of the U.S.

Engineering of the U.S.

Division for South R350m (£190m). A KWU official said financing muller and MAN will particip-details for the turbines had not ate in no fewer than six of the been completed. Decisions still eight recent boiler and turbine

SHIPPING REPORT

Hint of optimism for dry cargoes

BY ANDREW FISHER

WHILE TANKER business braith Wrightson, has been just remained sunk in gloom, there were faint signs of improvement on the dry cargo side of the shipping market last week. According to Denholm Coates,

there was reason for modest optimism for the first time in many weeks for the owners of handier size (25,000-40,000 deadweight tons) bulk carriers in the Pacific.

Increased business enquiry on the U.S. West Coast and in Australia has resulted in a few higher-priced chartering fixtures and a distinct lift in morale.

remains weak. But across the Atlantic, rates for grain car-goes from the U.S. Gulf to continental Europe have risen to \$10.25 a ton. For handy size vessels, there

was only a modest recovery on the U.S. Gulf-Japan run with

For larger tonnage, the East

rates up to \$19.25 a ton against lows of around \$18.35. The tanker market, said Gal-

There were more Caribbean "limping along." No large fixtures, but rates remained vessels were fixed from the sluggish. More fixing for dis-Arabian Gulf, while only three charge in Europe was seen, no fixtures were noted from West doubt due to the cold weather in Europe. .

World Economic Indicators

INDUSTRIAL PRODUCTION

•	Nov. '81	Oct. '81	Sept. '81	Nov. '80	over previous year	Index base year
ŲS.	146.5 Oct. 781	149,6 Sept. '81	151.7 Aug. '81	149.2 Oct. '80	-1.8	1967=100
UK	105.4	103.4	103.5	103.3	+2.0	1975=100
W. Germany	116.6	115.9	116.6	175.4	+1.9 `	1975=100
France	1126	112.1	111.3	114.9	_ 2.0	1975=100
Italy	120.9	125.8	116.0	125.4	3.6	1975=100
japan .	151.7 Sept. '81	147.2 Aug. '81	143.7 July '81	143.T Sept. '80	+6.0	1975=100
Netherlands	107.4	109.0	1129	106.7	十0.7	1975=100
Belgium	112.9	110.7	108.4	111.0	+1.7	1975=100
-		Š	ww.co / 820	ent U.S. an	d Japan i:	Eurostat

European mission boosts **India** ties

HIGH-LEVEL talks between India and the EEC will begin today when a delegation led by Herr Wilhelm Hafer-kampf, vice-president of the European Commission, arrives for a 10-day visit.

The talks will be held in terms of the recently-signed, five-year commercial and ecobetween India and the EEC. The new Indo-EEC joint

commission also will meet in New Delhi on January 22-23. Later, the EEC delegation will hold talks with major chambers of commerce and industry in New Delhi, Bombay and Calcutta.

Herr Haferkampf and his delegation will discuss with India's Commerce Minister, Mr Pranab Mukherlee, ways to promote economic co-operation, trade, EEC invest-ment in India and project aid. One of the proposals to be discussed is establishment of an EEC-India business coun-

A fillip to Indo-EEC relations, which have been increasing at a slower pace than those with other countries and regions is expected to emerge when a permanent EEC mission is set up in New Delhi.

The agreement replaces the five-year commercial co-operation agreement signed in December, 1973. This was confined to trade whereas the new pact covers a much wider area of economic, financial and investment activities

Mexico signs nuclear safeguards agreemet le sa BY WILLIAM CHISLETT IN MEXICO CITY

Economic committee reviews price rises

acknowledging public opposition -charges are too high."

MEXICO AND Canada have signed a nuclear safeguards agreement under Mexico has agreed to abide by the rules of the Vienna-based International Atomic Energy Agency.

The agreement was signed at the end of the three-day official visit to Mexico by Mr Pierre Trudeau, the Canadian Prime Minister. The signing of the agree-

ment came two weeks before Atomic Energy of Canada, the country's state run nuclear

THE STRONGEST argument in

investing more than \$30bn at

company and six others from the U.S., France, Sweden and West Germany are due to submit tenders for a nuclear power plant in Mexico. King Carl Gustaf of Sweden

arrives in Mexico City today with a team of businessmen also in pursuit of the nuclear contract. The contract, worth more than \$2bn (£1.06bn), is the

first stage in Mexico's massive nuclear power programme to install 20,000 Mw by the end of the century.

Canada is probably the toughest country in safeguard matters and the fact that it has foregone a more formal agreement emphasises the intense competition building up for the contract. Canada is offering its Candu system based on

natural and not enriched uranium which is viewed favourably by the Mexican Government because Mexica has its own sources of the metal. The country would

OB a foreign source officials given no indication that Candu system would bicked. Mexico will not m

August. • Mitel communications Ottawa and Telefonos Mexico, the state run to phone company have agrical to establish an \$18m letter venture to manufacture telephone switching systems.

announcement

Canada awaits contract decision

BY DAVID FISHLOCK

ted by the Canadian Governthe U.S., France, Sweden, and ment to Mexico during Spain. M Trudeau's three-day Mr Pierre Trudeau's visit visit last week indicates the there last week was probably importance Canada attaches to the performance of this nuclear winning this contract. reactor in Canada itself. The The Candu (Canadian weakest may be Canadian Denterium Uranium) reactor is industry's ability to help a Canadian development born of Mexico enter the nuclear age. an Anglo-Canadian-French col-Mexico has declared the most Mexico has declared the most laboration which began towards ambitious nuclear development the end of the Second World programme of any developing War. France supplied the basic country. It has no nuclear idea for a heavy water reactor reactors operating today, but which would use natural has two totalling 1,300 Mw (unenriched) uranium, avoiding

the portfolio on Candu presen- rivals in another four countries,

under construction. It talks of a big technical hurdle. But the need to enrich water current prices in some 20,000 instead of uranium-to make Mw by the end of the century heavy water — introduced Bids for the next tranche of another technical problem, Both about 2,300 Mw have been France and (much later) requested by February 1. The Britain abandoned the system, Canadian bid has been drafted leaving Canada as the only by Atomic Energy of Canada nation in the world to focus Limited (AECL), a crown corexclusively on a heavy water

poration with a payroll exceed-ing 7,500 which does research. Today Today, Canada lias 5,500 Mw design and engineering for the of Candu nuclear plant in opera-Candu system. It also makes tion, and a further 14 units struction in the provinces of time average capacity factor of

Candu, however, has six Ontario, Quebec and New Bruns- 77 per cent - "the higher wick. It has two standard units, of 600 Mw and 950 Mw electrical Candu differs from other com-

mercial reactors in that it uses numerous small pressure tubes instead of a single large pres-sure vessel, to contain the conditions required to raise highpressure steam for a large turbo-generator. Its fuel is uranium dioxide, sealed into short fuel assemblies packed into these

The pressure tubes themselves pass horizontally through a large tank of heavy water, which serves as moderator for the nuclear reaction. Fuel can be loaded and unloaded by robot machinery while the reactor remains on-load

Candu continues to perform better than most other types of reactor. In its annual presentation to the International Atomic Energy Agency in Vienna last autumn, the Canadian Government claimed heavy water and design plants totalling 9,500 Mw under conthat, by the end of 1980, the

Top of this league in was the Bruce 2 unit (860 kg with a capacity factor close 95 per cent. "Even allow for the notorious difficulty comparing international formance figures. Can exceptional record cal seriously be challenged." Off

Mr James Donnelly, presid and chief executive officer
ABCL, in his annual report
year, claimed there was grow
evidence of the suitability
Candu for many countries. continued evidence of system's superiority and growing overseas experience the construction of Ca stations have stimulated wi interest." Especially encou ing was the fact that custom such as Romania and Sol Korea were expressing interin buying more.

FINANCIAL TIMES, published steept Sundays and belidays, subscription rates, \$385.00 per

(7

for this purpose.

which quoted him as saying political power was meaning without economic control. "Before we have control our mines and farms and

fits at the expense of the

soon between the two particles in Franchine ruling coalition to have about a one-party state.

rand Rates row looms as MPs return

BY ROBIN PAULEY

MPs return to Westminster Secretary of State to alter the play by the same rules as allocate an auditor to local today and immediately plunge amount of central government councils had to obey—making councils from either the public into controversy with the second reading of the Bill to ban supplementary rates, which has

Finance (No. 2) Bill will allow councils to fix a rate as high as they like in March but will prevent any second rate being levied during the financial year. ratepayer or by making cuts.

It replaces the first Bill, which
Unless it that substantial

would have limited the main rate call and forced councils to hold a referendum before they could levy a rate beyond a centrally determined limit. This proposal had to be with-

its passage through Parliament

because of the constitutional implications of referendums.

But two aspects of the new Bill have caused growing concern among MPs, local authorities and accountants. The first is clause 4, which allows the to use such a power and would lish an Audit Commission to rate.

of £1bn on inner city develop-

Local Government grant as a penalty after the concern. start of the financial year. It to choose whether to make up the loss by returning to the

> balances on which to draw, it would be forced to make cuts. be taken in a maximum of three an early day motion urging an This would mean the Government was controlling rather than influencing council spend-

drawn when backbench Tory A number of MPs on both MPs indicated they would block sides of the House feel the constitutional implication would be the turning of local government into controlled local administration if this power

was used in only one case. Some Whitehall sources say the Government does not intend

Unless he can satisfy MPs debate a move may he made this week to have the Bill taken to a special scrutiny committee before the committee stage, audit. This provides for evidence to access to Bills before they

their progress up unduly. Mr Heseltine could then be called to give evidence on

grant payable if he wants to at all decisions by March 31. But or private sector. The Bill any time in the financial year, the refusal of Mr Michael leaves the Secretary of State This means that a council Heseltine. Environment Secre- with reserve powers to order attracted growing criticism which the Government feels is tary, to clarify his intentions an extraordinary audit of any overspending could lose some over clause 4 is causing growing council even if the Commission has decided not to call one

Public and private sector would no longer have the right during today's second reading accountants are working on a common approach to oppose this clause, which they feel threatens the independence of

> About 300 MPs have signed 90-minute sessions, enabling alternative, originally proposed by the Public Accounts Combecome law but not holding mittee giving ultimate control their progress up unduly. of public sector audits and accounts to Parliament.

> Tory-controlled Solihull Counclause 4. One problem is that cil will today challenge in the Mr Francis Pym, Leader of the High Court the cheap fares House, does not like the idea policy of the Labour-controlled and has already said there are West Midlands County Council. no "suitable Bills" for its use West Midlands is financing its
> The second difficulty with the public transport charges with a Bill concerns the plan to estab- 14p in the pound supplementary

Strains on Labour peace pact likely

By Our Political Correspondent

STRAINS in the Labour Party's new truce seem likely to emerge when MPs return to Westminster loday and start trying to pin down precisely what was agreed between Labour and union leaders at Bishops Stortford

two weeks ago.

Though the desire for peace in the Labour Party is now wider than at almost any point in the past two years, some right wingers may refuse to accept the terms which the far Left is trying

to put on the peace.

Members of Solidarity, the organisation set up last year to counter the activities of leftwing militants in the party, are to meet this week to consider their strategy in the light of the Bishop's Stortford meeling. In particular, they will

have to decide whether to press ahead with plans to imitate the Left's own tactics

Though no formal agreement was reached at Bishops Stortford, the meeting was generally iterpreted as meaning that Mr Tony Benn would not stand for the deputy leadership again, if the Right did not try to reverse any of the gains made by the the Left since the election.

An indication of the desire for peace came yesterday when leftwingers moved to defuse a potential row over an article by Mr Michael Foot, the party leader, which was highly critical of Mr Benn. At least one close colicague of Mr Benn. Mr Michael Meacher, said he saw nothing provocative in the

BY DAVID CHURCHILL, CONSUMER AFFAIRS CORRESPONDENT CAR TRANSPORTER com- arises from concern about the panies, which deliver cars from price levels of cars transported manufacturers to the show- from UK car plants compared rooms, are expected to be investigated by the Monopolies imported cars from the docks.

monopoly investigation soon

Car transporter companies face

The commission will also be and Mergers Commission soon. Mr Gordon Borrie, director- asked to look at the degree of general of Fair Trading. has written to major car manufacturers such as BL and Ford as well as the five main car trans-porter companies, telling them that he plans to refer the car the distance a car is transpor-

The five car transporter companies contacted include: OFT. Silcock and Colling: Distributor Deliveries: the Tolemans Group: R. K. Bastable; and Cartransport, a subsidiary of the

Act. Mr Borrie's letter to the National Freight Company. companies outlines the draft terms of reference for the The Office of Fair Trading has written to BL, Ford, Talbot. and Vauxhall and to organisainvestigation and asks for comments. Once these have been tions such as the Motor Agents Association and the Road received the investigation will Haulage Association advising of car sthem of the impending inquiry. In the Office of Fair Trading in May. be formally referred to the

been examining the car transporter sector but was unable with the cost of transporting to comment on a possible monopoly inquiry. But the commission's investigation when announced - is likely to take up to 18 months.

yesterday confirmed that it had

Mr Graham Roberts, managing director of Cartransport, said yesterday he was surprised

monopoly reference from the During the past five years over a third of all the vehicle delivery contracts have changed hands and several newcomers to the industry have been able secure significant business,'

he said. The commission is concluding its investigation into the supply of car spares in the UK. This investigation is likely to end

Optimism on commercial vehicle output

BY KENNETH GOODING, MOTOR INDUSTRY CORRESPONDENT

UK COMMERCIAL vehicle pro- cent in registrations from duction should rise by nearly 218,000 to 225,500—the fact that Production should rise from 550 30 per cent this year from the manufacturers will increasingly last year to 1,100. very depressed levels of last be producing to meet orders year, according to the Econo- rather than supplying from mist Intelligence Unit.

The proposed investigation

transport system to the comis-

The investigation will be a

monopoly inquiry under the terms of the 1973 Fair Trading

still be in a weak position be-1982 would be more than 25 per

cent below that for 1980. The latest edition of the units of commercials for export is Motor Business forecasts that forecast to rise by 11 per cent commercial vehicle output this this year to 130,000 units. Howyear will be 285,000 units com- ever, the forecast recovery will pared with 230,100 provisionally not result in exports returning

estimated for last year. expected to show only a slight

stock will result in the signifi-Even so, the industry would cant improvement in production. 5.400.

cause the forecast output for value of sterling in international markets should lead to an increase in exports. Production

rebound in output this year. The unit says

articulated units of 28 tons and over could go up from 3,200 to Output of heavy (over 14.5

tons) three- and four-axle trucks is expected to increase from 1,650 to 3.000. At the other end of the mar-

ket, car derived van production -depressed for some time by

recovery this year — the unit units of up to 28 tons is pre- St. James's Place, London SW1A predicts a rise of about 3 per dicted to show the biggest INT. £4.

THE ROYAL Institute of per cent since the Government stock. British Architects today submits took office and architect's com- . Increase the lower limit for increase employment in the proposals to the Government for missions 26 per cent lower, it is val registration to £25,000 time for drastic action. The proposals include doublestamp duty is payable from RIBA's primary proposal to

Architects propose £1bn spending boost

ing the initial allowances for £20,000 to £35,000. the Chancellor, for inclusion in industrial buildings and a 12- Wider use of government the forthcoming Budget, calls month tax break on developfor a capital spending increase ment land in the inner cities, tions, which would encourage which would speed the release ment, housing improvement and of new land for building. Other proposals submitted

upgrading of road, water and • A reduction in interest rates. tion would enable the industry Grants to assist first-time buyers in raising house deposits . Zero-rated VAT on repairs to achieve a modest growth rate

private investment in high-risk areas such as inner cities.

ernment spending on construccould be met from such a sum.

The institute claims that with unemployment in the industry at 400,000, output down by 17

Description value of repairs to achieve a modest growth rate and maintenance. This would of up to 2 per cent in 1982/83 compared with a forecast 3 per unemployment in the industry and generally improve the at 400,000, output down by 17

The additional spending could construction

strategy has been based on the

"The Royal Institute believes that by making use of some if not all the tax measures proposed. the Chancellor encourage badly needed confidgrowth in

Analysts forecast modest ONLY A modest pick-up in Japan The paper is among the economic activity in OECD few which still regards single States is forecast for this year figure inflation as probable — by Phillips and Drew, brokers or even possible — in 1982 in and investment analysts. But Britain.

better in Europe than the U.S. In the New Year issue of World Investment Review published today Phillips and Drew dustrialised nations will be beavily influenced by the replacement of the 1980-81 oilnduced recession by a policynduced recession, as opposed to "boom" policies pursued

n 1975-76 after the first oil The paper predicts real gnp rowth of only 0.2 per cent in he U.S. in 1982 compared with nearly 2 per cent last year. Although Europe may do better with economic activity rising the review. 1.6 per cent in West Germany. per cent in Britain and 2.2 er cent in France, the growth ates are well below the verage rates of the 1970s.

ent in West Germany and second half of the year.

They predict a fall in U.S. interest rates in the first half of economic activity reaches a low but the combination of high government borrowing and some economic recovery are likely to push U.S. rates back up later in the year says

Brokers James Capel take a similar line in their International Board and Currency Review, predicting a short-term fall in U.S. interest rates, also Inflation predictions are 7 per a short-term recovery in sterling ent for the U.S. and about 4 per followed by a decline in the

recovery in OECD states

inflationary trends will moder. The analysts say currency ale and gnp growth will be movements are likely to be

determined by the interplay of interest rate differentials and current account performances. They predict a deterioration in the U.S. current account. angue that the economic pros-pects for the year in major in-smaller surplus in the UK (although some analysis fear the UK account could be in deficit by the year end) and strong improvement in West Germany and Japan.

__Lower power costs 'might S agree have saved Invergordon'

lighlands would have been owned by Kaiser Aluminium and ompetitive in the European narket had it received elecricity at the same price as that said yesterday that research eing paid by the two other arge UK smelters.

That claim was made yesteray by Rear-Admirol David was announced strengthened the unbar-Nasmith, chairman of case for continuation of pro-Highlands and Islands evelopment Board.

British Aluminium announced ne closure of the smelter on ecember 29. The shutdown ost 890 jobs directly and could ause another 600 jobs to be At the time of the closure, r Ronnie Utiger, British luminium's chairman, laid the

ame squarely on high power ists. A special power contract ad been arranged through the but electricity overnment, rices had led to the smelter uneconomically cording to the company.
The Invergordon smelter was ne of three set up in the late 160s under the auspices of Mr

arold Wilson's Labour Govern-

ent to try to reduce the

untry's dependence on im-

RITISH ALUMINIUM'S Inver- Northumberland (run by Alcan) ordon smelter in the Scottish and Holyhead in Anglesey (onw Rio Tinto-Zinc).

Dunbar-Nasmith Admiral commissioned by the Highlands and Islands Development Board before the Invergordon closure duction if the price of electricity we right.

improvements Significant could be made at the smelter improve its operating efficiency and reduce costs. The board was also advised that the world price for aluminium was likely to increase from 1983 and to "improve significantly from

"H the Scottish electricity generating authorities cannot supply electricity to a smelter in Scotland at the same price as a smelter can be supplied in other parts of the UK then something needs to be done about it since the English and Scottish grids are joined together," he said.

Availability of hydro-electric power in the Highlands should also be a major consideration. orted aluminium. The other Rear-Admiral Dunbar-Nasmith to are at Lynemouth in said.

737 take-offs order BY ANDREW FISHER

British airlines with Boeing 37s—similar to the aircraft vhich crashed in Washington week — have been rdered to increase take-off peeds in icy weather.

Aviation luthority (CAA) sent out a elex to the six British comanies which operate 737s on riday, stating that take-off peeds must be raised by beween two and five knots in

old temperatures. directive follows engthy discussions on the performance of the 737 aircraft in icy conditions. There have been several incidents which prompted these talks and the CAA order.

The CAA said the directive had been in preparation for some ume and its appearance just after the Washington crash which killed over 70 people was a coincidence.

The airlines affected by the CAA directive are British Airways, Britannia, Monarch, Air Europe, Orion and Dan Air,

An increase by fibn in gov-

130,000, the Institute says. "The Government's broad

expectation of a reduction of public spending with a corresponding increase in private sector activity. The latter has not occurred." Owen Luder, RIBA president, claims.

New models and the lower

stimated for last year.

Although the UK market is xpected to show only a slight

Opened by the secretary Deneal by the

Getting through to busy people can be less

than easy at times. Unless, of course, you use the new Telemessage.

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addressed to. And, so long as you send it in by 8pm (6pm on Sunday), we'll deliver the very next working day or refund your money.

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through, it's good value at £3 plus VAT for 50 words, particularly as the name and address come free.

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Two Hull trawlers sold to New Zealand

By Richard Mooney

BRITAIN'S two biggest and most successful trawlers have been sold to a New Zealand company because of the dramatic decline in fishing opportunities for the UK deep sea fishing fleet.

Arctic Buccaneer and Arctic Galliard, both operated by Boyd Line of Hull, have been bought by Fletcher Fishing of Auckland. This reduces the Hull deep sea fleet, which was 46 in 1974, to 14. The total deep sea fleet, which exceeded 500 vessels in 1974 is now fewer than 90, and many of these are not active.

More ships from the Hull fleet may be sold to join similar ships in offshore oil opera-tions in various parts of the

Boyd Line had offers for the vessels from British buyers, but these would have meant their being taken out of the fishing industry. The company preferred to self them to Fletcher Fishing, which has also offered two year con-tracts for a small management team and 60 Humberside trawlermen who will accompany the vessels. The ships will fish out of Auck-

director of Boyd Line, said: "They are the last vessels we would wish to sell but we are being forced to. We need the cash to clear some of our debts and try to keep what we have left going.

"Unfortunately they are our assets as they will be accompanied by management and safeguards and nuclear safety crews also trying to find the sort of future which is being regulatory activities. snatched away from them in their home waters.

"It's madness. We are forced out of business while Russian factory ships and Dutch trawlers make a profit from In 1978 Arctic Buccaneer set a

British catching record, pre-viously held by Arctic Galliard. This record still stands. Today a delegation of trawler officials for talks on the industry's problems. They will seek additional aid, folindustry last year.

1. Start planning now

going to get the most

out of it financially.

The complexities

and conditions of

taxation and invest-

from our branches.

which may be due.

foreign residence,

Exciting though the prospect is, going to

work abroad needs careful planning if you're

ment opportunity are so great that professional

Tax is a most crucial consideration. It is

vital that your precise tax position is agreed by

the Inland Revenue, preferably long before you

go. We can do it for you and claim any refunds

advice is essential. Lloyds Bank can provide

booklets on the subject, which are available

that advice and we've produced two new

2. Tax you need not pay

How London adds to the cashflow on world black markets

LONG-DISTANCE UK long drivers setting out for the Continent are apt to back wads of DM 100 banknotes into their wallets to pay for deliveries being picked up in Hamburg or

British enthusiasts seeking to buy their cars at cheap prices through dealers in Brussels at times last year bought so many Belgian francs through London banks that tellers ran into

supply shortages.
Diplomats and aircrew from countries with shaky local cur-rencies make highly profitable trips to their capitals with bundles of banknotes bought cheaply in London.

All this is part of a business which used to be the preserve of enterprising Continental centres like Zurich but is now booming in London-the twilight and often nefarious trade in foreign banknotes.

encouraged banknote dealing. The London market is One major London clearing bank has expanded its note trading department since 1979 from

Political instability in a

leading to a thriving external

black market in their currencies.

from mainstream western Europe and North America

maintain some sort of restric-

tion on the amount of local cur-

rency that can be exported or

Most holiday countries apart

focused on the clearing banks plus a cluster of wholesale banks like Trade Development Bank and Brown Shipley. The six to 22 dealers. big dealers are served by the myriad collection of bureaux de change which has sprung up on range of countries has prompted currency outflows, street corners in the past few

British banknote dealing has grown considerably since the ending of exchange controls in October 1979. This allowed British residents to dabble in foreign currencies for the first time since before the war. A further influence on the market is the increase in foreign

Governments in countries travel. International expansion ranging from coup-ridden parts of illicit or "black" economy— in which bills are settled in cash of west Africa to Greece, Spain or even Scandinavia want to to avoid registration by tax or avoid the foreign exchange other authorities — has also strains that can result from a

large pool of local currency be imprisonment for unwitting notes are often quoted at the ing built up abroad. The gap between the official

David Marsh looks at the booming trade in foreign banknotes

exchange rate at home and the often much lower rate quoted abroad acts as a barometer of the country's financial and economic stability. Unscrupulous operators

frequently diplomats misusing their immunity from customs searches—can make large profits by buying up banknotes cheaply abroad and smuggling them back into the home country. There they can be changed at a much higher rate.

One bank speaks of regular custom from an African diplomat making frequent currency smuggling trips to Moscow.

Contraventions of regulations can lead to stiff fines or even

holidaymakers and professional smugglers alike. domestic authorities restrict from being re-imported. The

None the less, in recent weeks currencies like the Maltese pound and the South African rand have fallen to a steep discount on the external market because of persistent outflows.

The Maltese pound, for instance, can be bought in London at 0.80 to the pound and sold at 0.90-against the official rate of 0.73. Not surprisingly, the biggest

Joser in recent weeks is the Polish złoty—for which the foreign banknote market is very thin. The rate is about 3,000 to the pound against the official value of 150.

above those legally allowed to be imported into the country denomination bank-

concerned, they usually ask they purchaser to sign a disclaiment showing that he has been made aware of the regulations.

Travel agents have plenty of stories about holidaymakers who fall foul of currency laws spending a few days in decidedly cramped accommoda-

tion with views restricted by

iron bars across the window. drachma notes rose recently to Sometimes banks build up Banks and travel companies large stocks of illegally exported articularly advise holiday banknotes for which they can particularly advise holiday-makers against returning home with large denomination notes. Even from countries like Italy,

not find customers.

arrange a deal with the for central bank concerned to re-patriate the currency at a discount. It can happen, though, that the central bank takes the currency back only on condition of receiving names and addresses of the customers who brought in the money.

Call for guard against nuclear weapon increases

BY DAVID FISHLOCK, SCIENCE EDITOR

THE INTERNATIONAL nuclear industry must not be tempted by lean times to undercut competitors in safeguards against nuclear weapon proliferation, Dr Hans Blix, newly appointed director-general of the International Atomic Energy Agency, has warned.

Dr Blix also wants more support from the nuclear industry for international safeguards, and for his efforts to harmonise nuclear safety.

Interviewed in London, where best assets and with them he is on his first state visit since goes some of the nation's best his appointment late last year Dr Blix said he regards nuclear

Without them, there could be no significant international trade in nuclear plant and materials

Dr Blix has talked to Lord Carrington, Foreign Secretary, and Mr Nigel Lawson, Energy Secretary, and to the council of the Uranium Institute, London-based think-tank of the international uranium industry. As a former Swedish diplomat and foreign secretary, he is owners will meet Ministry of and foreign secretary, he is Agriculture and Fisheries highly sympathetic to the present problems of the nuclear industry. But he pointed out that it is already flying with lowing the £25m of special some of the consequences of assistance granted to the under bidding in safegards earlier in its short history.



Dr Hans Blix

"In the long run this type of competition is counterproductive, not only for international security but also for that international system which is of such importance to industry."

Governments had to do more to convince countries which had not signed the Non-Prolifera-

Going to work abroad?

Six ways we can help you

make the most of it

if they renounced nuclear

Above all, Dr Blix would like to see the creation of a nuclearfree zone, in terms of nuclear weapons, established in the Middle East. But this would call for a closer involvement of the Arab states with the IAEA than exists at present.

Public perception of the role of the IAEA is distorted, he believed. It could not be expected to give assurances about nuclear material and plant to which it had not been given access. "The main risks of proliferation start where safeguards ends."

Nor could it give assurances about the long-term intentions of government, such as whether they would always remain with-in the NPT, or that they would never denounce safeguards or contemplate making nuclear weapons.

Dr Blix felt strongly that governments must develop a workable system of sanctions for those who transgress against the NPT, or refuse to for those sign it. At present the sanctions at its disposal were very restricted, beyond stopping funds for technical assistance tion Treaty (NPT) that the and asking for return of equip-security these non-signatories ment or materials supplied sought would be better assured through the agency.

Demand for Liverpool factories rises sharply

By lan Hamilton Fazey

INOUIRIES for new factories in Liverpool rose dramatically in 1981 and continued unabated throughout the time of last summer's Toxteth riots, according to figures released by the Liverpool

development agency.

In the six months from April to September there were 437 inquiries, an increase of 86 per cent on the same period in 1980, with the space involved up by 69 per cent at 2.93m sq ft.

The higgest rise in demand was for factories of between 1,000 and 3,000 sq ft. Inquiries were 206 per cent up at 239, confirming other evidence of a surge in start-ups of small

On Friday in Liverpool Mr Patrick Jenkin, the Industry Secretary, revealed that the North-West was well ahead of all regions outside London in taking up the Government's

in taking up the Government's loan guarantee scheme for small businesses.

Demand for large units is also rising. The agency's figures show 68 requests for help on factories bigger than 10,000 sq ft, 38 more than last year and accounting for 155m sq ft om sq ft.

The figures appear to have been only slightly boosted by the launch of Liverpool's Speke enterprise zone at the end of August, with 75 inquiries in September, com-pared with 47 in September

Much of the demand for smaller factories is believed to be from people already on Merseyside.

Mersey docks keep going in Arctic weather

SHIP OWNERS are praising the way the Mersey Docks and Harbour Company and its dock labour force have kept operations moving at the £50m Royal Seaforth complex during the six weeks of

Aretic weather. It has not been achieved without considerable cost, however. This will probably wipe out the savings achieved by the company's energy conservation campaign over the last 12 months.

Capt Trevor Platt, the Hgrrison Line terminal manager, told the company: "These are the worst weather conditions we have encountered at Royal Seaforth, and it is commendable that the wheels have been kept turning. The operation has obviously been much slower, but the ships have been moving in and

Wider careers for accountants planned

BY MICHAEL DIXON, EDUCATION CORRESPONDENT,

tered accountants retain broad career prospects over the next 20 years, instead of becoming progressively restricted to specialised auditing jobs in big lished today by the Institute of Accountants in Chartered England and Wales.

The new " policy framework" for education and training leaves room for a change enabling trainees from industrial and commercial companies to qualify as members of the institute as well as students from professional firms.

Another proposal is to require nembers to take more professional training after qualifying perhaps having to complete specified amounts of study over 10 years before being eligible for fellowship status - to avoid overloading or lengthening the period of pre-qualification train-

ng. Moorgate
This change of balance is ex- ECR 6EQ.

STRATEGY to ensure char- pected to prevent the costs of initial training from becoming too high for small professional practices, and so concentrating the development of future char-tered accountants almost entirely in large practices.

lowest prices abroad precisely

because it is these which

price gap between large and

Norway, Portugal, Sweden, Spain and Iceland, such notes

can be re-exchanged only at a

When banks sell customers

foreign banknotes in amounts

as much as 28 per cent.

denomination

Of the institute's 15,329 students in March 1981, 33 per cent were in firms with up to 10 partners, and only 9 per cent in those with 11-20 partners. The other 58 per cent were being trained by the 41 largest Although the document says

changes will be made smoothly and only after full consultation, the admission of trainees working in industrial and commer cial companies will be officially considered by the institute's council at the end of the year. Education and Training - a

policy framewrok. Free from Institute of Chartered Accoun tants in England and Wales, Place.

Catholic bishops condemn Ulster teacher training plan

THE 90 per cent or so of Nor- denied by the Government and Rate watcher. thern Ireland's Roman Catholics by the Minister at the centre of who attend Sunday mass, yesterday heard an attack by their bishops on the Government's proposals for rationalisation of teacher training in the province.

British ministers have found

themselves unwillingly embroiled in one of Ulster's most sensitive religious issues as they try to cope with a drop in the number of school pupils and a surplus of teacher training

The bishops declared yesterday "Education Sunday" and, in a letter read at all masses, they claimed the Government's proposals "contravene religious

freedom and the rights of con-

the row, Mr Nicholas Scott.

Chilver, which said that the two Developments, East Anglia's Catholic colleges — one for men and one for women — should amalgamate and move to the site of the state (and therefore largely Protestant) college at Stranmillis in South Belfast.

The numbers of Protestant children at school is falling faster than the number of Catholics, and the awkward implication is that, if student teacher numbers are reduced evenly, the small proportion of Protestants teaching in Catholic These charges are strongly schools would rise sharply.

National Savings suffer

receipts in December falling on the month to £240.4m.

This brought the total amount received by the Department of National Savings nine months into the current financial year to £2.90bn. The Government has set a target of £3.5bn from National Savings in 1981-82, leaving another £600m to be acquired in the remaining three

National Savings in Decem- of all taxes.

NATIONAL SAVINGS ended bor were concentrated almost 1981 on a quiet note, with net entirely on National Savings

Certificates, both the indexlinked-still popularly known as Granny Bonds—and the non-index-linked. The index-linked sold a net amount of £92.6m, little more than half the amount sold in November, while the nonindex-linked sold £81m-around two thirds of November's figures. November's figures were boosled by the launch of the 23rd Issue, a non-index-linked certificate offering the highest yield ever of 10.51 per cent net

sector pay curbs THE Confederation of Build industry has stepped up it pressure on the Government. curb the size of public secto pay rises.
Some of the CBI's seni

CBI urges

public

leaders fear that their effect to keep pay risses at low have in the private sector may be put in the private sector in jeoperty by settlements of public sector pay dispute involving groups such miners, water workers and th

railwaymen. This morning the CBPs fort nightly news bulletin draw sector pay has been running ahead of the private sector in

It repeats information coas trined in the December issue of the Treasury's Economic Progress Report, which said that since 1970 the pay of male employees has increased con-siderably more in the public sector than in the private

The CBI estimates that settled ments in Whitehall and town halls have totalled 33.1 per cent a since 1979, compared with 27.5 per cent in the nationalised and universes and only 25.8 per a since the control of the c cent in the private sector.

et a cost of £60m.

PETERBOROUGH City Councils for has been urged to appoint and His policy is based on the specialist consultants at £10,000 recommendations of a commit- a year to protect the film rate : in the tee chaired by Sir Henry able value of the Queensgate and which opens this spring on a 15-acre site in the city centre

> Mr John White, Treasurer, warned the council that many stores and shops D. would have the benefit of specialist valuation advice in contesting their rateable value. He recommended employment of chartered surveyors for two were years "to protect the interests much of ratepayers."

Studio go-ahead

PLANS FOR Central Tele lands studios in Lenton Lane, Thomas Nottingham, have been approved by Nottingham City in planning committee but there is & Pome still no settlement of the elec- (entrained tricians dispute which has protect prevented the start of providing grammes for the East Midlands diagon

Steel partners

BABCOCK CONTRACTORS OF PARTY the UK is to collaborate with the extreme Engineering of Canadia entering to supply surnkey "mini steel mills, it was announced have today.

Babcock, part of Babcock International, will manage and plan the supply of materials folds the steel plants while Ferror part of the Canadian Co-steel group, will design the milk.

Quinton Hazell may lack buyers THE For Sale sign has been

put up on Quinton Hazell, which claims it is Europe's largest maker of automotive replacement parts. Its parent, Burmah Oil, says OH has no role in Burmah's future strategy and this would naturally affect its growth and development. But who would want to buy QH when the UK automotive industry is only gradually emerging from the deepest recession in living memory? Huge losses of money and jobs have been the order of the day. There seems room for little growth either in the UK economy as a whole - or in the automotive sector in particular. But any attempt a company makes to offset low growth at home by traditional exporting methods is blunted by the high value of the pound, which reflects the oil in the North Sea rather than Britain's relatively

of production. With this in mind, QH has been trying to build up its operations outside the UK because, in spite of the "big-gest in Europe" boast, it still depends heavily on its busi-

low productivity and high cost

nesses in Britain. This overseas expansion requires cash, and Burmah, with other fish to iry, feels disinclined to provide it.

Who wants a spare car parts maker? asks Kenneth Gooding

Any buyer of QH will, there—the manufacturing operations—or, have to be a substantial — QH International, which regards at the operations outside for, have to be a substantial organisation willing to put up the cash for overseas expansion as well as the purchase price (assets employed are valued at £50m). If, that is, the new parent goes along with the ideas of the QH management team, led by Mr Ray Sollett, chief executive since October 1976. He insists that QH is a fullyintegrated group and it would make no sense to split it into chunks to be sold off piecemest. The activities are grouped in four principal divisions:

Ouinton Hazeli Automotive, manufacturing operations with factories producing a whole range of components for cooling systems, brakes and transmissions, steering and suspension, silencers and exhausts. Partco, a national wholesale distribution company with 150 depots selling parts to the motor trade. About 40 per cent

of the QH factories' output goes to Partco. • Standard Motorists' Centres. he retail division with 120 they are known.

iepots in the UK operating an they are known.

There are three main UK factories and the group employs about 7,600 world-wide. the retail division with 120 depots in the UK operating an exhaust and tyre-fitting service

the UK. The major element is Quinton Hazell Superite, the quoted South African business which is 80 per cent owned, with the rest of the shares in public hands. It is a miniature version of the UK parent and has an £8m turnover.

There is a similar manufacturing (silencers, brakes) wholesaling, retailing business in Australia and wholesaling companies in Italy, Holland, Belgium and France, all whollyowned. And in Ireland, QH has a reconditioning plant for clutches as well as the whole saling operations.

As for experts from Britain, a little goes to a lot of countries -134 at the last count QH has its own sales company in the

Turnover of QH as a whole in 1980 was £144m and profits were £6.3m, down from £11.2m Mr Sollett says the figures for 1981 will show a small profit when

So, to return to the original approach of the UK automotive course to ponent groups, which have been attempting to slim down their home operations rather their home operations rather than acquire more.

In the not-too-distant past, the

U.S. component groups have been attracted by British companies. Dana bought Tunes Manufacturing, which make transmissions and clutches, and also Brown Bros, the automotive parts distribution business.

Rockwell bought Wilmer, Breeden, another automotive Commonts were been been been been been been automotive to the common and the common automotive transmissions.

components maker.

The evidence suggests the recently they have been wishen they had not bought them.

ITT has shown some enthusiasm for expansion of the European automotive interes and there is a trading linbetween ITT's brake-making subsidiary in West German, Alfred Teves, and OF Barrent management changes in the control of the contro

ITT mean the expansion police could be changed Perhaps a conglomerate lik the Hanson Trust or Louri might cast an eye in QH But the betting in the

industry is that Burnish no likely will have to support unwanted offshoot for some time to come.



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campaign to woo Plymouth voters

NOT SINCE Labour's landslide victory in 1945 have the Con-servatives suffered the humiliation, of seeing all three Ply-mouth constituencies in hostile

which the SDP Liberal alliance has made in the city in a few short months that, even though the next general election is still over the political morizon, the warning lights are already flashing in Tory nerve centres.

Leading the attempt to persuade Plymouth's voters to reject both the existing major parties will be Dr David Owen, MP for Devonport, who just under a year ago signalled the beginning of a significant development in British politics by breaking with his con-stituency Labour Party.

The astonishing level public support shown for the DP in recent by elections and public opinion polls underlines the importance of Dr Owen's SDP's impressive membership determination to ensure that the in the Plymouth area. This has revolt by the moderates against the hard Left's growing dominance over the Labour Party did not peter out in a series of ineffectual gestures.

Since its uncertain beginnings he has been a central driving force in the SDP's development. He is certain to retain a pivotal position when Mr Roy Jenkins eventually returns to the Commons and takes over the parliamentary leadership.

Foreign Secretary at 38 — when appointed to the office in 1977 he became its youngest occupant since Anthony Eden-Dr Owen is one of the com-paratively few British politicians who can be sure of instant recognition on the international

False image

Arrogance is the charge most frequently levelled against him by detractors. Mannerisms which betray a readiness to be both aloof and combative ("talks like a Guards; officer," says one Old Etailian Tory who knows him well heaps to per-petuate what those closest to him insist is a false image.

Dr Owen first became a Plymouth MP in 1966, ending an 11-year period of Conservative domination which began when Mr Michael Foot, who scored a dramatic victory at Devonport in 1945, suffered the first of two wounding defeats inflicted on

la February 1974, after a shrepd assessment of boundary changes which restored Plymouth to a city of three constituencies, Dr Owen switched from Sutton to capture Devonport from Dame Joan Vickers, the had twice triumphed over Mr Foot He then beat off her getempt to regain it eight months later.

Another massive rejigging of political boundaries in Plymouth will take effect before the next ceneral election. Many voters in the existing Devonport, Drake Sand Sutton divisions will find inhemselves with different electoral neighbours as a result.

Three newly-formed constituencies with the unispiring rames of Plymouth North, Plymouth Central and Plymouth East, are proposed. Calculations which did not take the SDP-Fiberal alliance into account suggest that had Dr Owen remained in the Labour Party and fought Plymouth North he would have escaped for the first time the perils of being in Westminster's marginal seat brigade. Plymouth North will include significant sections of the existing Devonpout constituency.

While his supporters argue that such old yardsticks are now largely irrelevant—and some are bold, enough to assert he is capable of winning any one of the three seats—it is notable that Dr Owen is keeping his outline appear.

options open. Some of the SDPs top echelon are urging him to eschew short term heroics and choose the consrituency most likely to provide a sound and enduring political base. They believe he provides the best guarantee that the party does not become a mushy centre grouping, but retains the cutting edge needed to clear a

In his concluding article on the Liberal SDP alliance in the West Country, Ivor Owen looks at the options open to Dr David Owen in the face of changing

way through some of Britain's

constituency

boundaries

Others advocate a more adventurous course, and point to the good social mix in the impressive membership provided further confirmation that, even before his departure from the Labour Party, Dr Owen enjoyed a good deal of broad based support crossed conventional

One of the reasons for this is the decisive role he played when Navy Minister in securing the future of Devonport Dockyard, on which the prosperity of Plymouth and much of the surrounding area depends.

It was his influence which resulted in Devonport getting the capacity to refit nuclear submarines. That has proved the key factor in averting or rundown, the fate facing Chatham and Portsmouth. Optimism among SDP sup-porters in Plymouth is also encouraged by the continuing disgray in the Labour ranks still reeling from Dr Owen's defection—and the evident malaise in the local Conservative organisations.

In contrast to earlier years not one of the three Conservative constituency associations employs a full-time agent. Attempts to reach agreement on financial arrangements, which would enable a joint appointment to be made, have failed.

The absence of the skilled professionalism of the Conservative Party machine—an omis-sion which will doubtless be repaired well in advance of the next major poll-is a bonus for Labour. A full-time agent looks after Labour's interests throughout Plymouth.

Main hope

The Devonport division also reports a bigger response to its fund raising efforts than was achieved a year ago and has already kined up an able prospective candidate. He is 31rear-old Mr Julian Priestley who holds an administrative post in the European Assembly. He has twice tried to secure election for a Plymouth seat. Steering clear of Dr Owen would improve his prospects of proving that third time can be

In any event. Mr Priestley is tikely to be Labour's main hope of winning a constituency west

For all his outstanding record of achievement at both local and national level it is unlikely that Dr Owen will risk standing in Plymouth East, largely based on the present Sutton division where Mr Alan Clark secured an 11,287 majority for the Conservatives in 1979.

Plymouth Central could turn out to be Dr Owen's final choice. Apart from a slice of the present Devonport division its largest component will be made up of parts of the present Drake constituency. The incum-Conservative MP. Miss bent Janet Fookes, has needed all her vigour and tenacity to retain a majority and survived by only 34 after a succession of

recounts in October 1974. One thing is sure. The constituency contested by Dr Owen will be the centre of media attention, not least because Mr Foot has promised to participate in the all-out campaign which Labour is determined to mount against him.

Discount house links up with commodity broker

BY DAVID MARSH

GERRARD AND NATIONAL, a between Gerrard and Inter leading City discount house, is Commodities may be only the leading City discount house, is setting up a joint company with London commodity broker Inter Commodities to operate on the financial planned London

futures market The unique hink has been forged to pool the expertise of the two companies in money

and commodity trading. The formatial futures market, due to start in September, allows currencies and interest rate instruments to be traded like commodities. The City will face growing competition in financial futures from diversified U.S. broking firms which trade both money and com-

the pooling of resources

first of a number of link-ups among London companies planring to trade on the exchange. The new company, will act prenazily as a clearing member

of the London exchange. intends to take part in the cleaning facilities which will be organised by the International Commodities Cleaning House. Mr Brian Williamson,

director of Gerrard, said the two companies planned to pool their skills. Gerrard had particular expertise in banking while Inter Commodities would contribute its experience in commodity trading and on the futures market in financial

Owen leads SDP | Strike may close port | Welsh miners hold key to pay ballot | BY ROBIN REEVES, WELSH CORRESPONDENT

this week By Brian Groom, Labour Staff will take place tomorrow, amid THE PORT of Southampton, scene of more than 10 mouths of disputes, faces a new crisis

this week.
Cargo-handling is almost at a standstill because of a strike by the port's 140 foremen, after being reduced to a third of capacity since October by an unresolved dispute with 150 cargo checkers on a new shift system. Only the cross-

which could result in closure

Channel ferries are working. The main employer, the British Transport Docks Board, last week said it would resume three-shift working in the container berths from the weekend, in anticipation of a settlement with the checkers. But the checkers threw out the peace plan, and the foremen voted to strike.

Today the Docks Board

must either begin paying the port's 1,400 dockers as if normal working were resumed—a big expense on top of the millions lost so far because of disputes—or risk a confrontation

The dockers' insistence that other groups, such as the fore-men and checkers, should not he allowed to work extra shifts in overtime, which give them potentially higher earnings, is at the root of the

THE DELAYED strike hallot of Besides holding up the of Wales could also encourage dards. If they chose to accept 25,000 miners in South Wales ballot, last week's severe a moderate stance. it, that was the miners' choice. signs that it may hold the key miners' leaders from holding South the result of the national a series of pithead meetings to president, said he would be ballot on the Coal Board's offer explain their reasons for recomof a 9.5 per cent pay rise.

the way for distribution of strike action "if necessary." ballot papers to the many Welsh collieries cut off by last of the union.

offer is by no means certain.

weather also prevented Welsh

Weekend reports that coal, the ballot result, and Mr Joe fields elsewhere may not have Cormley's last-minute intervenweek's heavy snow. South Wales backed the National Executive's tion, had angered many miners miners account for some 10 per recommendation in sufficient and would, he felt, ensure a cent of the total voting strength strength to secure the 55 per f the union.

cent support for strike action. At the same time, Mr But-Although traditionally the could well influence the Welsh field was careful to stress that area is left-wing, a big majority miners' voting in favour of the the executive could never NUM investigation and an vote against the pay NCB's offer. The acute un-recommend an offer involving eventual full apology by the

severe a moderate stance,

Wales NUM's vice a "very surprised" if there was mending rejection of the offer a vote to accept the 9.5 per cent The weekend thaw cleared and drumming up support for offer. Sir Derek Ezra's warnings of no more cash, whatever bigger vote against the offer,

At the same time, Mr Dutemployment affecting the whole a cut in miners' living stan-

it, that was the miners' choice. Even so, Mr Des Dutfield, the It would, however, be treated as

Tomorrow's poll will take place under conditions of strict secrecy, Local union officials have been instructed to bar the Press from colliery premises or risk the men's votes being dis-qualified.

The ban on the media follows unfounded Press allegations of ballot rigging in South Wales a few years ago, which led to an

weakening the financial position of the popular papers, and have called for mergers and the appointment of editors to be subject to journalists' approval. The merger issue is likely to be the most controversial one of the ADM, to be held

by both teams of negotiators

Journalists

at merger

WIDESPREAD opposition to

the proposed merger with the

print craft union, the National Graphical Association, is

revealed in motions to the

annual delegate meeting of

the National Union of Jour-

Journalists are also con-

cerned over racial bias in the media and "bingo" wars

uneasy

By John Lloyd,

at the end of March. Talks between the unions are said

LEADERS of the National Union of Blastfurnacemen Leadley, 57, general secretary from April 26, when Mr Hector Smith retires. Mr Leadley represents northern

The NUB has been in merger talks with the much likely to combine soon.

Occupation of Dunlop factory to continue

Group's Semtex floor coverings on December 15. plant at Brynmawr. South Wales, voted yesterday to continue a five-week occupation of their factory. They rejected an ultimatum

payments. the market for do-it-yourself of support from other factories rubber and earpet tiles because in the Dunlop Group which fear

The workers' action originally aimed at securing withdrawal of 60 redundancies and guarantees of further in-restment to underpin the plant's

from the Duniop management future. Duniop's decision to to quit the site by 7 am this close the factory outright will morning or lose all severance mean about 600 redundancies. According to The company said ten days Howard, trade union convener ago that it was closing the at the factory, the workers "They realise that this could factory and withdrawing from have been inundated by offers now mean a confrontation with

pany's management is "allowed to get away with it.'

Mr Geoffrey Jacobs, district officer of the main union involved. the. Transport and General Workers Union, said the decision to reject Dunlop's ultimatum - taken at a twohour meeting yesterday - was

"They realise that this could going to-prison. But they accept cussions with Dunlop over the of the adverse effects of the they may be threatened with it. The dispute will go on until weekend.

WORKERS AT the Dunlop factory occupation which began the same medicine if the com- there is a negotiated outcome, Mr Jacobs said.

The workers had been told by the management that they were in breach of their contracts but that Dunlop was willing to make ex-gratia severance payments equal to the statutory minimum redundancy terms, provided the occupation ended this morning, he said.

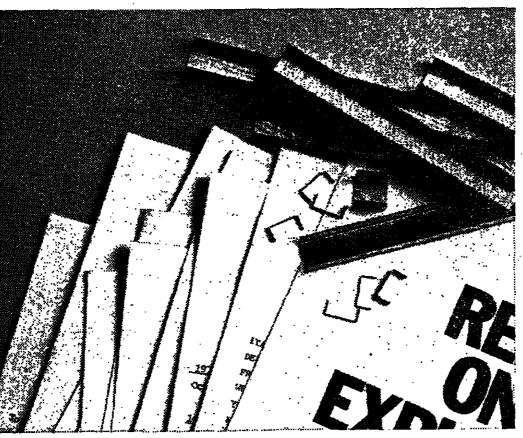
Earlier Mr John Miller national officer of the Transpor Union's chemicals group had tried unsuccessfully to open dis-

NUB chief named

to have gone well.

higger Iron and Steel Trades Confederation. The two are

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a superb copy standard at 45 copies per minute. For a personal demonstration of these

two copiers, or for further information, call 01-380 1418, or ask the Operator for Freefone 2279.



TENDER PREQUALIFICATION OATAR GENERAL PETROLEUM CORPORATION HEADQUARTERS BUILDING - WEST BAY

Oatar General Petroleum Corporation will shortly invite bids for the complete construction contract for the New Headquarters Building, West Bay, Doha, Qatar.

The New Headquarters Building comprises approximately 21,000 square metres of high standard four storey offices over lower parking floors for approximately 340 cars. The New Headquarters is sited adjacent to the existing QGPC Headquarters and the works include various connections between the two buildings.

The works will comprise: piling by approved subcontractors, general building works. engineering services including air conditioning, finishings, fixed furniture and equipment and external works including planting. Facilities to be provided include a computer centre, cafeteria, office accommodation, conference rooms etc.

Only prequalified firms will be invited to participate. Acceptance for prequalification will be limited to firms who have during the last 5 years—built at least one project of similar type, size and quality and—executed at least 3 major projects in the Gulf

Interested firms should submit applications for prequalification in duplicate not later than January 21 1982.

1st copy to be sent to:

The Manager, Engineering and Construction Dept, QGPC (HQ), PO Box 3212, DOHA-QATAR. Telex: 4343 PETCOR DH

and 2nd copy to:

Weidleplan Consulting GmbH, Planer Architekten Ingenierue, Postfach 30 08 09. D-7000 Stuttgart 30, WEST GERMANY.

Telex: 722313 WEIDL D

in covers stating "PREQUALIFICATION-QGPC HEADQUARTERS BUILDING DOHA"

Application must include:-

- Full details of company including forms of incorporation and clarification of relationship of any proposed joint venture.
- Complete financial statements (audited) for the last five years including annual turnover in Oatar and the Middle East.
- A list of current projects quoting value, involvement and percentage completed with contract completion date.
- A list of comparable completed projects with brief details of value, involvement, programmed and actual dates of completion.

It is intended to invite bids in March 1982 from a selected list of prequalified firms who will be notified accordingly by QGPC.

The Tender period will be 12 weeks and Bills of Quantities will be provided. Tender bonds will be required.

The contract period will be approximately 27 months and the contract will be turnkey fixed price.

BAHRAIN LIGHT INDUSTRIES COMPANY

FURNITURE PLANT

INTERNATIONAL PREQUALIFICATION OF EQUIPMENT SUPPLIERS FOR WOODEN FURNITURE MANUFACTURING

The BAHRAIN LIGHT INDUSTRIES COMPANY wishes to prequalify firms interested in tendering for the equipment of the future furniture plant in Bahrain, The Gulf.

The plant (approximately 9,000 m²) includes a boardline, veneerline, solid woodline, surface treatment line and an upholstery line to produce -on an industrial scale—furniture, chairs, doors and upholstery.

Tender documents are expected to be available in February, 1982.

Firms with experience in similar works and who are interested in the delivery, erection and commissioning of the complete plant equipment, should send prequalification documents with information about the firm, list of references and their abilities for export financing not later than January 31, 1982, to:

> MOTOR COLUMBUS Consulting Engineers Inc. Parkstrasse 27, 5401 Baden Switzerland

KINGDOM OF MOROCCO

OFFICE NATIONAL DE L'EAU POTABLE

CALL FOR TENDER No. 29/DE/81

The Office National de l'Eau Potable (ONEP) have issued an international call for tenders concerning the project of supply of drinking water to the town of AGADIR from the dam of Tamzaourt (30 kms away) (financial participation of The World Bank).

The call is for the design to the completion of the works of a purifying plant with a debit of

Correspondence should be in FRENCH.

Tender documents may be obtained from the issuing authority at a cost of DH 1,000. Closing date: 24/3/1982.

Please write to: Office National de l'Eau Portable Division Equipement Quartier Administratif

RABAT specifying on each envelope the title and date of

KINGDOM OF MOROCCO

OFFICE NATIONAL DE L'EAU POTABLE CALL FOR TENDER No. 24/DE/81.

AGADIR DRINKING WATER SUPPLY

The Office National de l'Eau Potable (ONEP) have issued an international call for tenders concerning the project of supply of drinking water to the town of Agadir.

Summary of the works involved:

laying out of trenches
 supply and laying down of pipes Ø 600/8500 ml
 and additional equipment such as joints and taps
 additional works such as man-holes, various

Only companies from countries member of THE WORLD BANK and SUISSE may participate. Correspondence should be in FRENCH.

Tender documents may be obtained from the issuing authority at a cost of DH 1.000. Closing date: 24/03/1982.

Please write to: Office National de l'Eau Potable Division Equipement Quartier Administratif. RABAT

specifying on each envelope the title and date of the

KINGDOM OF MOROCCO

OFFICE NATIONAL DE L'EAU POTABLE

CALL FOR TENDER No. 25/DE/81

The Office National de l'Eau Potable (ONEP) have issued an international call for tenders concerning the project of supply of drinking water to the town of TIZNIT and area from the Youssef Ben Tachfine dam on the Oued Massa, with a debit of 145/1/sec.
The project will be undertaken with the financial participation of the KRENDISTANSTALT FUR WIEDERANF BAU (K.F.W.).

The works have been programmed in three stages: No. I —PIPES

No. III-ELECTRO-MECHANICAL EQUIPMENT No. IV—PURIFYING STATION

Details on each part-project may be obtained from the Export Intelligence Service, B.O.T.B., 50 Ludgate Hill, EC4M 7HU — telephone: 01-248 5757. Tender documents may be obtained from the issuing. authority at a cost of DH 1.000.

Closing date: 24/03/1982

Please write to: Office National de l'Eau Potable Division Equipement Quartier Administratif RABAT

specifying on each envelope the title and date of the

FOR AGRICULTURAL PRODUCE INTERVENTION BOARD

INVITATION TO TENDER 1

INVITATION TO TENDER 2

Tenders are invited for the urgent supply of 2,000 tonnes of begind soft wheatflour for delivery on a fob stowed and trimmad basis to an EEC port. Loading shall commence no earlier than 15 February 1982 and no later than 22 February 1982.

The price for the supply and transportation costs of the flour for the above tenders will be determined on examination of the tenders which must be submitted by noon on Wednesday 27th January 1982 to:

HOME GROWN CEREALS AUTHORITY
Hambyn House, Highgate Hill, London N19 5PR

Notice of invitation to tender together with tandering forms obtained from:

Branch B (Cereals), Internet Market Division, intervention Board for Agricultural Produce, Fountain House, 2 Queens Walk, Regding BG: 7QW Tel: Reeding (0734) 583626 Ext. 368/276

the tender.

TANZANIA ELECTRIC SUPPLY COMPANY LIMITED (TANESCO) Invite Prospective Tenderers for

THE CONSTRUCTION OF THE MTERA HYDRO-ELECTRIC POWER PLANT.

PHASE III DEVELOPMENT OF THE GREAT RUAHA RIVER.

The Tanzania Electric Supply Co. Ltd. (TANESCO) intend to harness the available head in the Great Ruaha River in connection with the recently completed Mtera Dam by constructing a Hydro-Electric Power Plant.

The Government of Tanzania has applied for international development credits from the International Development Association (IDA), the Norwegian Agency for International Development (NORAD), the Swedish International Development Authority (SIDA), and from other agencies for the construction of the Mtera Hydro-Electric Power Plant. It is intended that proceeds of these credits will be applied to payments under the contracts for the project. The credits are expected to be available about mid -1982.

The works for the Mtcra Power Plant will comprise all civil, mechanical and electrical works for the installation of 2×40 MW generating capacity in an underground power station near the existing Dam.

3.1 The following Tender Documents are intended to be issued for the Mtera Power Plant during April 1982.

TD, 11. Civil works, including ventilation and various temporary facilities,

TD 12. Penstock Steel lining and Gates, TD 13. Turbines, Pipework and Crane,

TD 14. Generators,

TD 15. Transformers, and

TD 16. Other electical equipment incl. 220 kV switchyard

3.2 The civil works will comprise the construction of a short headrace tunnel, two vertical penstocks (length about 100 m each) an underground powerhouse, an approximately 10 km long tailrace tunnel (in total about 850,000 m3 of rock excavation), roads and various housing and storage facilities.

3.3 The Mtera site is located on the Great Ruaha River in the Iringa region, Tanzania about 650 km by road from Dar es Salaam.

Contractors wishing to be considered for the civil, mechanical and/or electrical works should submit the following information for prequalification as evidence of their capability.

4.1 Records of similar projects completed in the last ten (10) years.

4.2 Financial statement of last year and a summary of last three (3) years.

4.3 Detailed reports on company structure.

4.4 Curriculum vitae of key staff giving educational background and employment ex-

4.5 Details of equipment and resources which will be available for the work.

Prospective Tenderers are invited to register themselves by submitting in duplicate the documents in 4.1 to 4.5 above not later than March 15th, 1982. -

Envelopes with documents are to be marked: Mtera Power Plant Project, Tanzania Prospective Tenderer

And sent as follows:

1 Copy to: TANESCO P.O. Box 9024 Dar es Salaam 1 Copy to: SWECO P.O. Box 5038 S-10241 Stockholm Sweden

6. Prequalified Tenderers will be notified when the respective Tender Documents are available and will be required to purchase three sets of Documents. The cost of the three sets will be US Dollars 400 for each of the six contracts specified under 3.1 above.

COMPANY NOTICES

NOTICE TO SHAREHOLDERS DIVIDENDS ON PREFERENCE SHARES 72. Shards not at the rate of 5°, per amount for the six months ending 28th February, 1982—equivalent to 5 cent. per share—FRIPD 5°, CUMULATIVE PRESENCE SHARES—DIVIDEND NO. 70.

GREATERMANS STORES LIMITED

errence shares—Dividend No.

70.

A dividend at the rate of 5°, per annual for the six months ending 28th Februar, 1982—contralent to 5 cents per share of contralent to 5 cents per share declared in South African currency amon flowers paying the share of the surprise of baring the specific share of the Darrey tax we be purposed paying the above produced the Share Registers, in resect of the above Preference Shares will be closed from 30th January, 1982 to 12th February, 1982, both days inclusive.

min be Closed from John January.

1882 inclusion
Discount cheques in bayment will
be bosted on or about the 28th
February. 1982.

By Order of the Board
B. C. CPAGG, Secretary.

220 Commissioner Street.
101anne-burn. 2001
South African Transfer Secretaries:
Central Renistrary Limited.
154 Market Street
Jehanne-burn. 2001
FPO Box 4944 Johnne-burg 2000;
London Transfer Secretaries:
Gentral Renistrary.
London Transfer Secretaries:
Granty Registration Services.
Bourne Hoose.
34 Beckenham Road.
Beckenham, Kent. BRS 4711,
United Kingdom.

NOTICE OF PURCHASE EUROPEAN INVESTMENT BANK

USSS. 0:00 000 111/1-, RONDS OF 1980, DUT 15th JANUARY 1992

"ursuant to the terms and conditions of the Loan, rolice is hereby gleen to Bondholders that, during the melter-month priod ending 14th January 1982 USSS.200.000 principal ground of such Bonds were purchased in hair-statement of the Concerned Purchase fund obligation.

Outstanding amount on 15th Lanuary 1982 Outstanding amount on 15th January 1982 U.S.370.400.000 prin-cipal amount. Dated 13th January 1982 EUROPEAN INVESTMENT BANK



RBC INTERNATIONAL INCOME FUND LIMITED

BEARER DEPOSIT RECEIPTS An interim dividend in respect of the period orded 3rd November 1361 has been declared and will be payable on the 19th January 1382. US\$0.53 will be paid against pre-sentation of Coupon No. 3 of the beater depositary recoupts at the Fund's Depositery. und'a Dopositary.
THE ROYAL BANK OF CANADA
(CHANNEL ISLANDS) LIMITED
P.O. Box 48
St Julian'a Avenuo
St Peter Port
GUERNSEY
Channel Islands

CITY OF VINA DEL MAR 5% LOAN 1913 NOTICE IS HEREBY GIVEN that all the outstanding bonds of the above-mentioned loan will be redeemed at par on 25th January 1982 from which date all interest thereon will case.

These hands when pretented at the office of Misland Bank Limited Stock Exchange Services Department for redemption must have the coupon dated 25th July 1982 and all australent coupons, attached. The usual interval of four clear days will be required for examination. Midiand Bank Lid. Stock Exchange Services Dept. Mariner House, Poors Street. London ECSN 4DA.

BANQUE INTERNATIONALE POUR L'AFRIQUE OCCIDENTALE US\$20,000,000 Floating Rate 1978/83

The rate of interest applicable for the six months period beginning on January 15, 1982 and set by the reference agent is 151% annually.

Grédit National USD 75 millions

floating rate 1978/88 The rate of interest applicable for the six months period beginning on 15th January 1982 and set by the reference agent is 151% annually.

ART GALLERIES

LEFEVRE GALLERY, 30, Bruton St. W1, 01-03, 1572/3. AN EXHIBITION OF IMPORTANT XIX AND XX CENTURY. WORKS OF ART. MON-Fri 10-5. MARLBOROUGH 6. Albemarie St. W.I. ALEX KATZ — RECENT PAINTINGS Until 6 Feb. Mon-Fri 10-5.30. Sat 10-12.30 pm. MATHAF GALLERY, 32. Motromb Street. London. SW1 Tel. 235 0010. Specialists in 19th Century and Contemporary Paintings in ARABIA.

WHITECHAPEL ART GALLERY. White-chapel High St. 337 0107. Tube Algaete East. To 24 Jan. BRITISH SCULPTURE IN THE TWENTIEH CENTURY. Part 11 1951-80. Sun-Fr. 11-5. cl. Sat. Adm. £1 (50p). Free Mon Z-6. AGNEW GALLERY, 43 Old Bond St. WY, 629 6176. 108th ANNUAL WATER-COLOUR EXHIBITION Until 19 Feb. Mon-Fri 9.30-5.30; Thurs until 7.

CLUBS

VE has outlined the others because of a policy of fair play and value for money. Supper from 10-3.30 am. Disca and too musicians, clambraus hossesses, exciting foorshows. 187 Regent 3t. 734 0557.

THE GAS LIGHT of St James's London's more interesting businessman's night club 2 bars, restaurant, dancing, cabiret sorts. Happy hour 8-9 pm with all bar drapts that price. No membership required. Open Mon-Fri 8 pm-2 pm, Sar 9 pm-2 am — 4 Duke of York Street, SW1 Tel. 01-930 1648/4950.

THEATRES

WAREHOUSE, Donmar Theatre, Earlham St. Covent Gdn. Box Office 836 6808. ROYAL SHAKESPEARE COMPANY WAREHOUSE FESTIVAL 18 Jan-2 Feb. Ton't 7.30 pm AUNT MARY WE WAREHOUSE FESTIVAL 18 Jan-2 Feb. Ton't 7.30 pm AUNT MARY WE WAREHOUSE FEB. ST. SEC. Commany Members. Tomor, discussion of The Future Openama in Theatre & Television, Seats £1.50.

WESTMINSTER. CC S 01-834 0283. GAVIN AND THE MONSTER. A funtery adventure musical. Until Set. Mon-Sat 2.75. Fri & Set 6.48. WHITEHALL BOY OF hel 01-839 8376, 01-330 8012-7765, CC 01-930 6693-6694, Group selet tel 01-379 6051 Whitehall's latest farm ANYONE FOR DENIS? by JOHN WELLS, Directed by DICK CLEMENT, MON-SAT EVES 8.15 pm. MAT SAT 5.00 pm.

WYNDMAM'S. S 836 3028. CC 379 6365.
Group reductions 836 3962. GDLIN
BLAKELY, ROSEMARY HARRIS IN
ARTHUR MILLER'S ALL MY SOMS.
Directed by MICHAEL BLAKEMORE.
Man.Fri 7.30. Sat 4.30 & 8.00. Wed
mat 2.30.



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BUSINESSMAN'S DIARY

UK TRADE FAIRS AND EXHIBITIONS

Date	Title
Jaπ 19-22	Which Computer? Show (01-747 3131)
Jan 20-27	International Hotel and Catering Exhibition-
····	HOTELYMPIA (021-705 6707)
Jan 23-30	The Tanen Book Tools
	Ideal Homes, Food, Trades and Leisure Exhibition
To De no	(0243 687381)
Jan-24-27	Leathergoods, Luggage and Handbag Fair (01407
··· ·	-1582)
Jan 26-28	HIREX 82-Exhibition and Conference of the
	Mite Doustry (0622 679845)
Jan 30-Feb 3	British Toy and Hobby Fair (01-701 7127)
Feb 14	Photography at Work Exhibition (01-688 7788)
Feb 24	COMPELEX 82—Electronic Components Exhibi-
~ 00 2	tion (01-629 4304)
T-L 7 11	148H (91-029 4004)
Feb 1-11	International Spring Fair Gifts (01-855 9201)
reo 8-12	:LECOTORNION Technology and Management Exhibit
- 14 ± 1	TOR EDG Conference
Leo 10-17	Western Burkering Shour (ALEAS SHACE
Feb 10-12	Ceremic Tile Exhibition and Conference TILEX
	(01-450 0466)
Feb 12-14	Crufts Dog Show (01-493 7838)
Feb 14-17	International Men's and Boy's Wear Exhibition
	(021 705 6707)
1. 17 的复数发展	TANK TOO DIVI)

OVERSEAS TRADE FAIRS AND EXHIBITIONS

OATHORN LITTLE LYING WAS
Jan 14-25 Boat Show (01-439 3964)
Jan 19-22 Europipe '82—Construction and Maintenance of
Pipelines Exhibition and Conference (6727 63213)
Jan 22-31 International Commercial Motor Show (02298
Jan 24-28 Middle East Construction Extr. and Conserence (01-935 8200)
Jan 25-31 Do-it-yourself exhibition—KARWEI (01-286 1951)
Jan 29 31 International Boat Show (01-486 1951)
Feb 5-14 International Boat Shore (01-486 1951)
Feb 9-18 Equipment and apparatus for drug production and testing exhibition (01-235-2423)
Feb 10-13 International Trade Fair for Household Appliances, Fittings and components—DOMOTECHNICA (01-409 0956)
Feb 13-16 International Trade Fair for Watches, Jewellery and Selverware—INHORGENTA (01-486 1951)
经工程收益 化二磷酸甲基苯基 医二氯二甲基二甲基甲基甲基二甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲

BUSINESS AND MANAGEMENT CONFERENCES

Anyone wishing to attend any of the above events is advised to telephone the organisers to

Financial Times Conferences

This conference sponsored with Helsingin Sanomat will review problems and prospects for the

- Developments in the European Pulp and Paper Industry and the EEC countries preparation

- The integration of Scandinavian mills and the role of North America as suppliers to Western

Speakers will include Mr Fernand Braun, Director General for Internal Relations, Commission of the European Communities; Mr Norbert Lehmann, President, PWA Papierwerke Waldhof-Aschaffenburg AG: and Mr John Worlidge, Executive Director, BAT Industries, Deputy Chairman, The Wiggins

In view of controversies over the new French economic policy the Financial Times is pleased to announce that M. Benoit Jolivet, Advisor, Ministry of Economy and Finance, will be giving a major

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Profitability and competitiveness in industry in North America and Western Europe

ensure that there has been no change in the details published.

DODINE	O TITO BITUTO BINDING OF
Jan 19 1	CBI: Jordan—the new 5 year Development Plan (1981-86) (01-379 7400)
Jan 19-21	Crown Eagle Communications: UK Government Contracts (01-638-0617)
Jan 20-21	FT Conference: World Coal Markets (01-621 1355)
Jan 21-22	The Economist: Europe and Japan—Competition, Collaboration or Confrontation in the 1980s? (01-639 7000)
Jan 25-29	London Business School: Management within the
Jan 25-29	Manchester Business School: The Micro-chip Society—planning for the future (061-832
Jan 26	7972) ESC: Pricing for profit (057282 2711)
Jan 27-29	ESOMAR/EFMA: How research can help financial
	organisations communicate internally and externally (01-251 4549)
Jan 27-28	Meridian Conferences: Capitalise on Communica- tions (01-670 5400)
Jan 28	Dun and Bradstreet: More Effective Collection
	Techniques for Credit Controllers and Super-
Tom 90	visors (01-247 4377) Marketing Society: Media—The Inside Track
CHAIR ACT CONTINUES	(01-543 5191)
Feb 1-2	Metal Sulictin Congresses: Middle East Metals and Minerals (01-633 0525)
Feb 2	Oyez: Company Finance for the Executive Secre-
Feb 34	FT Conference: The Seventh Pensions Conference (01-621 1355)
Feb 4	IPS: Energy (0990 23711)
	American Tax Institute in Europe: Finance/Lessing under new U.S. tax laws (Paris 256 33 70)
Feb 9-12	INFO '82—The challenge of Information Tech- pology (057282 2711)
Feb 9-10	FT Conference: The Euromarkets in 1982 (01-621-1355)
Feb 9-12	Offshore South East Asia Conference (01-546 5144)

EUROPKAN PULP AND PAPEK IN THE 80'S

industry in the 80's examining in depth three main issues:

Heisinki — 17 and 18 March 1982

THE EUROMARKETS IN 1982

All enquiries should be addressed to: The Financial Times Limited

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American Embassy

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Earls Count

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Moscorw

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Winter Gardens, Eastbourne

Kensington Exhibition Centre

Wembley Conference Centre Earls Court Exhibition Centre, Harrogate

Barbican Exhibition Centre Exhibition Centre, Bristol

Wembley Conference Centre

Olympia.

Europa Hotel, W1 Regents Park, NW1

Selsdon Park

Bowater Conference Centre.

Café Royal, WI Piccadfilly, W1

Portsman Hotel, W1 Grosvenor House, WI Waldorf Hotel, WC2

Barbican Centre Inter-Continental Hotel, W1

industry in the UK.

joined the following boards as of high quality recruits.

APPOINTMENTS

Group changes at Miller Buckley

Mr Peter Ayton group finan-chairman: Westinghouse Semi-cial director of MILLER BUCK-conductors, Westcode Systems, LEY has been appointed a main Westinghouse Brakes, Westingboard director of Buckley Investing house Signals. Westinghouse ments and also a director of Davenset Rectifiers, Westing-Miller Buckley Developments, house Foundry. Douglas Sales Mr Charles Farrer chief legal and Service, Partridge Wilson officer for the group has been and Co., Hawker Siddeley appointed a director of Miller Revenue Osignal Co. (Australia) Buckley Developments. Mr Gerry Brake and Signal Co. (Australia) Robbins has been appointed and Powertech Inc. Mr Willford general manager and a director Westinghouse Cubic as of Miller Buckley's wholly owned Tony Pascoe group personnel manager, has been appointed a pointed to the board of Westing-director of Miller Buckley Group house Brake and Signal Company

now been appointed managing

Provincial Insurance announces the appointment, from March 1 1982, of Mr Kenneth J. Walker, MA, ACII, as deputy managing

As part of its 1982 expansion programme CENTURYAN SECURITY announces a nationwide restructuring programme to assist senior management, and has appointed Mr J. Dick and Mr Alan Begg (previously general managers for southern Scotland and London respectively) as

has been appointed a director of the DAILY MAIL and GENERAL PRINTERS. Mr John Sackfield Wallwork

Mr J. M. Souness, FFA, a director and general manager of the LIFE ASSOCIATION OF SCOT- Integrated Graduate Development Scheme at Warwick the Associated Scottish Life University. In April, 30 Offices at their stated annual graduates from its manufacturating in Edinburgh an Integrated Scheme at Warwick and Integrated Scheme at Warwick Conference of the Conference of the Conference of the Life Scheme at Warwick and Integrated Scheme at Warwick Conference of the Life Scheme at Warwick Co Mr J. M. Souness, FFA, a direcary 15. He succeeds Mr J. M. Macharg who steps down after year term in the chair. Mr W. M. Morrison, MA, FFA, a director and general manager of the Scottish Life Assurance Company, was elected deputy chairman of the association.

Mr Trevor Barton has been elected chairman of the financial ector specialist group of the IN-STITUTE OF MANAGEMENT

Mr. Mike Webster has been ably the longest established live 24-hour telephone response net-

has also joined the board of

with effect from November 10, 1981: Mr J. R. C. Boulding, man-The Board of MATERIALS aging director of Westinghouse AND METHODS announces that Brakes, Mr R. Ward, managing Mr C. M. Dunks, who has been director of Westcode Systems technical director since 1974, has director of Westinghouse Signals Mr C. Ryalls, managing director of Westinghouse Services has also been appointed with effect from December 1, 1981.

> Mr Nick Turnbull has just been appointed managing direc-tor of SMALL ELECTRIC MOTORS, maker of permanent magnet DC servomotors in the UK. He takes over from Mr Alan

International appointments, see page 16.

Rolls-Royce to graduate scheme

meeting in Edinburgh on Janu- ing staff will be sent on the

BL Cars and Lucas Industries completing the customary two who, since April, 1981, have year term in the chair. Mr W. M. sent 60 graduates from their full-time staff to the university's department of engineering, are to send a further 60 to join the Development Scheme.

Rolls-Royce sees the scheme initially as an opportunity to enable production professionals to become acquainted with the most modern manufacturing methods and concepts.

Sixteen-week modular courses cover 26 specialist subjects, from production processes and appointed marketing director at computer-aided design and ANSWERING, said to be prob-management to personnel management. Tutors from the university and industry provide work for the professions and a blend of academic stimulation and practical experience. Of particular importance is the Following his appointment as scheme's ability to "convert' chairman of WESTINGHOUSE science graduates to the specific BRAKE AND SIGNAL COM- skills of manufacturing engi-PANY, a Hawker Siddeley com- neering—an area in which inpany, Mr R. A. Willford has dustry suffers from a shortage

PARLIAMENTARY DIARY

TODAY Commons: Local Government Finance (No. 2) Bill Lords: Social Security (Conributions) Bill, second reading; livil Aviation (Amendment) Biff, second reading. TOMORROW

Oil and Bill, (Enterprise) second Health Lords: Mentad

(Amendment) Bill (HL),

WEDNESDAY Commons: Criminal Justice Bill, second reading; Opposition prayer on the Transfer of Functions (Minister for the Civil Service and Treasury)

Order. Lords: Debate on the Pearson Royal Commission on Civil Liability: Sex Discrimination

(Amendment) committee. THURSDAY

Commons: Debate on subject to be chosen by Opposition. Lords: First report of the Select Committee on Procedure; Harbours (Scotland) Bill (HL), committee: Fire Service College Board (Abolition) Bill (HL) committee; Reserve Forces Bill (HL), second reading; Civil Jurisdiction and Judgments Bill (HL), committee; Unfair Dismissal (Increase in Com-pensation Limit) Order 1981; Employment Protection (Variations of Limits) Order 1981.

FRIDAY Commons: Private Members' Bills; Supply of Goods and Services Bill, second reading; Trade Descriptions (Amendment) Bill, second reading.

BASE LENDING RATES

DUAT 221/1	
A.B.N. Bank 141%	Robert Fraser 15 %
Allied Irish Bank 144%	Robert Fraser 15 % Grindlays Bank
American Express Bk. 144%	■ Guinness Mahon 141%
Amro Bank 141%	■ Hambros Bank 141%
Henry Ansbacher 141%	Heritable & Gen. Trust 141%
Arbuthnot Latham 141%	
Associates Cap. Corp. 15 %	C. Hoare & Co †141%
Banco de Bilbao 14½%	Hongkong & Shanghai 141%
BCCI 141%	. Knowsley & Co. Ltd 15 %
Bank Hapoalim BM 141%	Lloyds Bank 141%
Bank Leumi (UK) plc 141%,	Mallinhall Limited 141%
Bank of Cyprus 141% Bank Street Sec. Ltd. 16 %	Edward Manson & Co. 151%
Bank Street Sec. Ltd. 16 %	Midland Bank 141%
Bank of N.S.W 141%	Samuel Montagu 141%
Banque Seige Ltd 144%	■ Morgan Grenfell 141%
Banque du Rhone et de la Tamise S.A 15 %	National Westminster 141%
Barclays Bank 144%	Norwich General Trust 141%
Beneficial Trust Ltd 151%	P. S. Refson & Co 141%
Bremar Holdings Ltd. 154%	Roxburghe Guarantee 15 % E. S. Schwab 141%
Bristol & West Invest, 16 %	Slavenburg's Bank 141%
Brit. Bank of Mid. East 141%	Standard Chartered 141%
■ Brown Shipley	Trade Dev. Bank 141%
Canada Perm't Trust 15 %	Trustee Savings Bank 141%
Cavendish G'ty Tst Ltd. 151%	TCB Ltd 141%
Cavzer Ltd 15 %	United Bank of Kuwait 144%
Cedar Holdings 15 %	Whiteaway Laidlaw 15 %
■ Charterhouse Japhet 15 %	Williams & Glyn's 141%
Choulartons 15 %	Wintrust Secs. Ltd 141%
Citibank Savings 115 %	Yorkshire Bank 144%
Clydesdale Bank 144%	Mambers of the Accepting Houses
C. E. Coates 15 %	Committee.
Consolidated Credits 141%	7-day deposits 12.50%, 1-month 12.75%, Short term £8,000/12
Co-operative Bank*144%	12./5%. Short term £8,000/12 months 15.10%.
Corinthian Secs 141%	1 7-day deposits on sums of £10,000
The Cyprus Popular Bk. 141%	and under 1217%, up to £50,000
Duncan Lawrie 144%	13% and over £50,000 134%.
Duncan Lawrie 141% Eagil Trust 141%	‡ Cell deposits £1,000 and over
E.T. Trust 141%	124%.

The Yes People now have an office in London. In the U.S.A., we're known as The Yes facturing, road building and other con-

People. It's a title we're proud of, a name we earned the hard way-through our willingness to dig in and work to develop the leasing plan that's precisely right, financially and in every other way, for that particular client.

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INSURANCE

Life and pensions sales break annual records

LAST YEAR was another record-breaking one for the life assurance industry, according to provisional figures for new life and pensions business.

The figures were issued on

Thursday by the three life company associations - the Life Offices Association, the Associated Scottish Life Offices and the Industrial Life Offices Association. New annual premiums last

year just failed to reach £2bn, rising 17 per cent to £1.99bn from £1.7bn, an increase which comfortably exceeds the 12 per cent rise in the Retail Price

Single premium business did even better, exceeding £1bu for the first time and reaching £1.07bn — 67 per cent higher than the £639m of 1980.

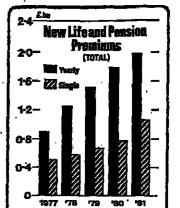
The industry appears to be

thriving despite the recession. but the figures for new business issued by individual life companies show a varied picture.

The bright spots in last year's business were headed by the continued growth of unit-linked life assurance and pensions business. A clear picture of the growth in 1981 will be available when the Life Offices Associapublishes the fourthquarter new business figures for ordinary life and personal pension business due in a few

weeks' time. But at the end of September. the totals for linked annual premiums at £173m and single premiums at £444m had both passed the sales for the whole of 1980 of £169m for annual premiums and £321m for single premiums. The linked life assurance companies participated fully in last year's savings

Abbey Life, one of the two largest linked life companies in the UK reported an 86 per cent jump in linked single premiums



in linked premiums to £55.4m. Life, the other major linked life company, is due to report in a

few days. The second bright spot has been the buoyancy of the selfemployed pensions market. The further tax concessions in the 1980 Finance Act meant that the self-employed invest more of their earnings in a pension contract and could invest unused reliefs of previous years. The introduction of a loan-

back facility proved a superb marketing aid to overcome a rejuctance by some self-employed to lock away assets in

The overall growth will be known when the Life Offices Association publishes the fourth quarter figures. But by end-September self - employed annual premiums at £98m were nearly 50 per cent higher than for the first nine months of 1980, and single premiums at £144m more than double. Both and conventional linked schemes have participated in this boom.

Savings through conventional with-profit contracts have shown meet current liabilities rather a mixed picture in 1981. Many banks have linked up with life to £55.5m and a 36 per cent in- companies in their drive to ments.

enter the house mortgage market, with the bank providing the finance and vetting the loan applications and the life company using its marketing outlets and providing low cost with-profit endowments for the

repayment of the mortgage. Although the association does not publish overall figures for this sector of the market life companies which have tied in with one or more banks have reported substantially higher sales despite the dull house purchase market in 1981.

Sales of with-profit endow-ments in the form of straight regular savings plans remained static in 1981 and were one of the dull spots of the year. This was particularly noticeable with industrial life companies. Industrial life business, where agents collect the premiums at the homes of policyholders, showed no growth with annual premiums of £211m.

The other dull market in 1981

has been company pension business-a sector hit by the recession in two ways. The growing number of redundancies has meant a cut back in membership of pension schemes and hence in premium income.

The lower growth in earnings of employees in the private sector has also meant a corresponding lower growth in pension increments, and thus lower increases in premiums. But it is a very mixed picture with some life companies severely hit and others with quite good results considering the economic situation.

The pattern of business changed significantly in 1981. Because of the uncertain outlook employers are unwilling to commit themselves to future payments. They are making single premiums payments to than annual premiums, which commit them to future pay-

FINANCIAL DIARY

testmor description of the control o

Finals:
Countryside Properties
Interims:
Estates Prop. law.
Group Investors
MFI Furniture
Westbool Inv. Tst.
DIVIDEND & INTEREST PAYMENTS—
Alliance Inv. 1p
Cropper (James) 1p
Hall (Matthew) 1.085p
Industrias Penoles SA de CV Fitg. Rate
Notes 1999 \$432.85
R8C Int. Inc. Fund Pig. Red. Pf. 55cts
Sekers Int. 0.2p
Treasury 2pc Index_Linked 2006 £0.92

ekers Int. 0.20
reasury 20c Index-Linked 2006 20.92
WEDNESDAY, JANUARY 20
COMPANY MESTINGS—
Nundee and London Inv, Tst., Royal
Exchange, Dundee, 12.90
January Tst., Great Eastern Hotel, EC Hanson Tst., Great Eastern Hotel, EC, New 11.30 MEPC. The Hyde Park Hotel, 66 Knights- Bren

(olvernampus.
Tre Station Hotel, 1
Midlands, 12.00
BOARD MEETINGS—
Finals:
Anglia Television
Arbuthnot Sterling Fun
Bootsam Engineers

Dyson (J. and J.: 20 Elvs (Wimbledon) Db. 3%pc. Ln. 5%pc Fobel Int. 0.20 Wandsworth Varia £7,4063 Wells Fargo 48cts

rataigar Hoose. The Institute of Chartered Accountants. Moorgate Place. EC. 11.30 Id Wire Group, Granton Park Avenue, Edinburgh, 12.00 BOARD MEETINGS—Finals:

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SW4.87
Ignama Spc Fitg. Rate Ser. Notes
5971.11
Petaling Tin Berhad 6.771p
Rockholders Inv. Tst. 2.45p BOARD MEETINGS-

Figure 1: Figure 1: Sterling Trust Utd. States and General Trust Interims :

FRIDAY, JANUARY 2Z
DIVIDEND & INTEREST PAYMENTS—
Anglo American Corp. of South Africa
19.20441p
BPB Inds. 4, 5p
BBB Inds. 5, 5p
BUrnett and Hallamshire 6.5a
Cart's Milling Inds. 3a
Control Scrurities 1.575p
Dawson Int. 2D
Exchequer 13 upc 1987 6, spc. 12 pc 19992002 5pc
Exchequer 13 upc 1987 6, spc. 12 pc 19992002 5pc
Exchequer 13 upc 1987 6, spc. 12 pc 19992103 5pc
Lennons Ground Foods 3.3p
Lennons Ground Foods 3.3p
Lennons Ground Foods 1, spc.
Lennons Ground Foo

ster 0.1p ndon and Midland Inds. 2.9p ndon and Midland Inds. 2.8cts Insbury (j.) 3.25p Helena Gold Mines 145cts ipa Grp. 3p urity Centres Hidgs. 0.5p insury Ln. 12.4pt 1992 6/apc. 13/inc 997 6/apc. 13/inc 937 6-pc easury 111 pc 2003-07 5 kpc. 14pc 1996

3.85p

GATURDAY, JANUARY 23

DIVIDEND & INTEREST PAYMENTS—
Bishop's Grp. 1p
Marston Thompson and Eversted 0.7p

Snow, slush, fog and strikes. Is it worth it?

if you value greater cost-effectiveness and efficiency in your business, it most certainly is.

The Which Computer? Show is the one time in the year when you can check out all the new technology under one roof. Over 30,000 business executives will

be visiting more than 200 exhibitors during the next four days. In view of the fun and games you may have getting here, may we offer you the following advice: If you come by car

plenty of it. If you decide to avoid the morning rush hour by arriving early, we'll be pleased to provide you with hot coffee

If you intend to come by train This could be a tricky one. The tracks are still there, but we can't be sure about the trains on Wednesday and Thursday. So to be safe, put us down in your diary

for Tuesday or Friday. Opening hours

The exhibition is open, normally from 10.00 am to 5.00 pm (Friday 4.00 pm).

Birmingham 19*-*22 January

However, exhibitors will try to be as flexible as possible in view of the circumstances. This year's Which Computer? Show

may be tough for commuters, but for computers and word processors it is unrivalled. Whether you come

you can be sure

Britis die die de la contra del la co

That's fine. There's free parking and and tea-with our compliments.

FINANCE FOR INDUSTRY TERM DEPOSITS.

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is the holding company for ICFC and FCI.

New thrust in no-break power ITT's come-back

BY GEOFFREY CHARLISH

AT THE foot of the Harz mountains some 70 miles down the autobahn from Hannover the 1,500 strong £30m turnover Anton Piller organisation plans to take an increased share of the world market for specialised power units by deploying a new development in rotary machines called Uniblock.

Already strong in areas such as 400 Hz rotary power supplies for big computers (it claims to have 60 per cent of the U.S. market) and in large scale ventilation/gas moving equipment, the company is now polsed to make a big impact with a design of uninterruptible power supply (UPS) based on combined synchronous motor and generator stator windings and a

Compact

Piller claims that the technique, no more expensive overall than the dual machine motor/generator set or static solid state systems, nevertheless offers significantly increased conversion efficiency. improved reliability and noticeable reduction in noise

The new system is also typically two-thirds the weight of a dual machine and correspondingly more compact.

The UPS is of crucial importance in many main-frame computers, communications and life supporting medical systems where loss of mains power, even for short periods, can be extremely expensive in terms of loss of computer data, failure of critical communications links, or even loss of life.

Cable and Wireless in Hong Kong uses Piller equipment to ensure continuity of a computer based switching system and in the UK one of the new "Uniblock" systems has been ordered by British Telecom for the Goonhilly satellite terminal.

There is also a need for these "no-break" systems to produce as clean an output as possible—ideally a mains frequency pure sine wave containing no potentially harmful multiples of the containing mains frequency (harmonics) and no high voltage "spikes."
Ideally then, what is needed is a black box placed between the three-phase mains supply and the system to be powered which ensures that, whatever the supply input condition, the black box

will always supply clean, power. continuous 50**H**z Furthermore, such a system. ideally, will never break

An early approach, still quite widely employed, uses a DC motor with its shaft coupled to an AC generator. The motor is normally fed by DC power obtained by rectifying the input mains.
When the mains fail com-

pletely, a battery is automatically switched in to replace the absent rectifier output. In either event, the AC generator continues to supply the 50 Hz output which is clean since only a mechanical shaft connects motor and

Use of a flywheel on the shaft allows short mains "drop-outs" to be accommodated from the stored flywheel energy.

Many of these equipments

are in use, but they are noisy and bulky and not too efficient (about 86 per cent). But they are reliable, says Piller, and popular in emergent countries since they have no complex electronics to service.

The other major technique of which Piller is not a strong proponent, although it has a small defence husiness -is the all-solid-state static inverter.

As before, DC is derived either from rectified mains or a battery and the inverter reconstitutes the AC with some harmonics that are reduced by suitable filters.

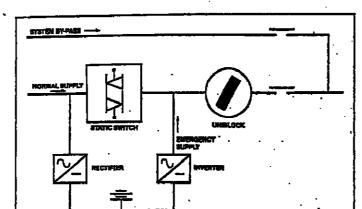
Reliability

Such systems are compact. lightweight and less noisy than motor generator systems. But, claims Piller, the component count in the electronics is often so high that good relative reliability is not obtainable.

according Klaus Sachs, Piller's technical director, this will probably always be the case in spite of improvements in component reliability: there are just too many of them. In addition, he points out, that suitably qualified engineers are needed to ser-

vice such systems. For these reasons. Piller has moved towards hybrid systems, the latest of which is the Uniblock, a kind of combined motor and generator in one machine.

Uniblock . consists, essentially, of a stator in which alternate slots are wound with input and output



windings. With the input winding fed from the three phase mains, the customary rotating magnetic field is causing the DC excited rotor to spin synchronism with the field.

Windings

What amounts to a transformer effect occurs between the input and output windings on the stator. Furthermore, by feeding the rotor with DC derived from the machine output via rectifiers, the power transferred from the input to output stator windings can be controlled and stabilised. Quite large mains input

stator output windings. In practice, even mains drop-outs lasting up to about 80 milliseconds cause no loss of output due to the "ride-through" flywheel effect of the rotor which is larger and has more inertia than it would otherwise have for its power

rating, due to the need to accommodate two winding High voltage spikes and

mains frequency variations are similarly reduced. For complete no-break protection, an automatic solid state switch (see diagram) activates a battery/inverter system, converting battery DC to 50 Hz AC. In the new Piller system about 5 per cent of the total power is diverted through this path during normal operation, providing a proving circuit and charging the batteries.

The design of the inverter is simple and reliable, says Piller—it only thyristors. The Uniblock design also reduces the transmission of harmonics through the system giving a porer sinewave output. These harmonics coming in on the mains input produce their own, faster rotating fields, but they are removed by special damping vindings that have no effect

If the Uniblock is seen as replacing a DC motor, a fly-wheel and an alternator (total of six bearings) with one machine having only two bearings, then it can be seen why the efficiency rises to about 92 per cent, says Piller. Uniblock has taken about four years to develop and prototypes have been exten-sively tested for about two years. While the company

admits that this is not long enough for in-depth reli-ability studies, it estimates that the mean time between failures should be of the order of 15 years. This, it claims, compares

with about nine years for motor / flywheel / generator arrangements and two years for all solid state systems. Piller executives are convinced that there is already a move away from solid state systems: presumably with Uniblock they intend to punch the message home.

Flame retardant

TECHNOLOGISTS at British Vita has developed a new foam material, which, they say, has unparalleled qualities of flame retardancy. It is also, they say resilient, comfortable and dur-

Called Vitafoam VFR, the material will not support combustion and will protect inflam-mable materials around which

in computers

separate, extended word pro-cessing keyboard, the CP/M

operating software and the BOS

operating system together with the Autowriter WP package

Various printers can be con-

nected via an RS 232 port and there is a standard output to a

. The system can be expanded

easily. By taking out one printed circuit board and inserting

another, the processor can be upgraded from eight bit to 16

Similiarly, the internal memory can be enlarged from the basic 64k bytes to 256k bytes. The floppy discs can be enhanced to 1120k bytes and, via

an additional interface card

hard disc to 10 megabytes can

be deployed.
Other buses—S-100 and the IEEE 488—can be supplied, as

can an adaptor to allow an ordinary TV set to be used

BOS operating system. Up to

Lead house for the project in

Basildon (0268 3040),

the UK is ITT Consumer Products (UK) of Chester Hall

which will be distributing the

product through microcom-puter dealers and software

supplies to large companies.

Servicing will be carried out

The series is available as free

instead of a monitor.

rideo monitor.

Autoindex

AFTER A period in which it For £2,500 the user gets the made an Apple-like micro-central processor unit based on computer called 2020, ITT has the eight bit Z80A, 64k bytes of now come out with its own memory, two five-inch floppy design of system based on the disc drives housed in the proeight bit Zilog Z80A or the 16 cessor cabinet (560k bytes), a bit Intel 8086. It is designated separate, extended word pro-

The 2020 has been dropped. But." says Mr F. H. Handa, ITT Consumer Products manag-ing director, "It did provide us with hard, expensive and package.

difficult experience that prepared us for the move to this
to operati

next stage."
Although FIT has joined a crowded market, Mr Hanna believes the 3030 will score over the others because, he claims, it has many of the attributes of a minicomputer with the exception of the price.

For ITT the computer might be said to have turned full circle. Those who are old enough will remember the Stantec Zebra of the early '60s, an admirable machine in its time, designed by Standard Telephones and Cables, ITT's main UK subsidiary.

But edicts from the very top of the corporation effectively stopped all computer development in the mid-'60s, on the premise that ITT was in telecommunications, not computing. In the last 10 years, however, t became obvious that telephone exchanges were fast

turning into specialised com-By adding a further card, the 3030 becomes a multiuser com-puter fully supported by the puters; expertise had to be rebuilt. once again ready to offer comfour users can access files or mercial computing products — the new 3030 has been designed undertake processing simultaneously. by STL Harlow in the UK and. is being built by ITT subsidiary,

Standard Electric Lorenz in Germany. UK micro-software house MPSL has written business application packages to perform on the BOS operating systemwhich has been proven in een proven in The Business Systems Group minicomputer of Brighton will look after bulk multi-user systems. But the machine can also operate under CP/M, DEC's

Isolation transformer range

now widely accepted standard through the same routes.

STABILAC, a range of TRX transients, spikes or other ultra isolation transformers has supply line disturbances. been announced by Claud Lyons, Hoddesdon, Hertfordshire standing units with two tone-(09924 67161). These are finish to blend with office decor. designed to protect computers A brochure is available from the or other equipment from voltage company.

ready-to-fit insulation enclosures made to meet clients. specifications and engineed to

land, UK (0740 30461). This comprises lightweight,

suit the equipment they pro-



SLOTTSEAL FORMBAND is a new scalant said to be easy and clean to use, resilient and compatible with all substrates, and able to cope without degradation with large amounts. of movements over a very wide temperature range.

needed, and seal capabilities exceeding two metres water gauge are attainable. More on 044 282 5303.

recirculating air) are generally noisy, cumbersome and hideous to behold-particularly in industrial applications—believes a newly formed British company, Eteq. which has just launched the 'Airblend' range of

Foundry range

ALPHASET TPA-2, an addition to its range of alkaline phenolic resins has been introduced by Borden (UK), North Baddesley, Southampton (0703 732131). Borden says that the TPA-2 range has reduced viscosity making it easier to mix and ensuring good distribution over the sand grains. The grade can be used to bond akaline

High strength moulds and The video monitor, essential cores can be made in cure times to operating the machine, costs from three to 45 minutes.

and poor quality sands as well

as high silica content foundry

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Temperature controller

MC30/IID with liquid crystal display, metal case, plug-in construction and freedom from Ri interference, has been intro-duced by West Instrument International Division of Guitan Industries. Technical details from 0273 606271



Air-powered coil nailer for pallet makers

AN ADDITION to its range of soft woods of round head, repetitive fixing into hard and 81341).

tect and the space available

No special tools are needed to instal the panels.

which are removable for rou-

tine inspection of the pro-

tected equipment.
The company says that the stainless steel construction enables the assemblies to stand up to the effects of weather and environment as

well as repeated exposure to

tected equipment.

air-powered coil nailers has plain, galvanised and ring-been announced by British shank nails up to 75 mm. It is claimed to be ideal for nated-the BIF-fast-750, the tool —Full technical details from BIF ls claimed to provide better at Aylesbury, Bucks (0296

BUILDING AND CIVIL ENGINEERING

Laing has £40m

A BATCH of new contracts for Estates SA "Arab Village" John Laing Group covers pro- under a £1.2m contract. Simijects for Spanish arm Laing larly priced is the construction SA, and the company's Scottish of a sewage treatment plant at region, all together worth over El Escorial, Madrid, for the

More than 530m worth in

Spain includes a £9.2m 1.6 kilometre long road tunnel with 10 kilometres of access roads and two main junctions in the Pyranees, in association with OSSA and Padros, for Tunel del Cadi, Concesionario del Estado SA. Another £7.5m project is for 312 apartments near Marbella of Aguilas in Murcia.

for Patrilla SA. At Teruel-about 200 kilometres east of Madrid-a new 31,800 square metre hospital is to be built for the National Welfare Institute under a £4m contract, and a further £2.3m hospital award for the same client at Denia, Alicante. Contracts totalling £2.3m are for extra works to two existing

An 850-metre railway tunnel at Castellbisbal near Barcelona is to be excavated and bridges constructed, under a \$2.7m unloading facilities and three award by RENFE, the Spanish upper car parking levels with

McAlpine dam in Portugal

Laing contracts at Gran Hos-

pital, Madrid, and Alicante hos-

Confederacion Hidrografica del

Finally in Spain, work is under way on four small schemes including a store at Castile pier in the port of Tarragona; drainage and embankment work for RENFE in Algeeiras; a 1,631-metre drain for Madrid City Corporation; and a pier for unloading fish at the port Laing's Scottish contracts are

worth over £10m and include the £4.8m Merchiston Hospital project at Brookfield. This is an extensive development cover-ing four detached 30-bed blocks together with a central amenity complex, mortuary block and a boiler house.

A new superstore complex in

Hamilton for Fine Fare is worth another £4.9m to Laing who will construct the entire a large superstore, malls and 14 integral shopping units. There will be basement storage. state railway company.

Also near Marbella, 48 houses will be built at the Grande and fitting out.

A board for all seasons

THE DEVELOPMENT of woodbased construction materials with cement bonding began half a century ago and the aim has include Portakabin, which has always been to combine the benefits of the two materials and reduce their individual disadvantages.

There have been numerous attempts to produce a good quality particle-board over the last few decades but, of all the facias are Duripanel at unfortunately, most of these and are finished with glass at resulted in a rather inferior reinforced plastic.

Potentials

The Swiss soldiered on with research and development of a dense board with good mechanical performance, because they recognised the potential in the construction industry for a durable, strong and fairly cheap sheet material. The result was Durisol AG's wood-cement particle board, Duripanel, widely used for some years throughout Europe and now about to be produced in the UK.

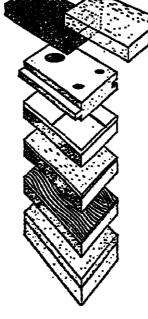
Smooth, fine grained with a cement enriched surface, the board is non-combustible, resistant to water, humidity. fungi and termites. It is offered, not necessarily

as a competitor or a replacement for chipboard, but as a versatile building material with a wide number of applications. Particularly suitable for external cladding, due to its good weathering properties (the sawn edge may be left unprotected), it is suggested also as an interior wall lining, especially in public buildings, of its fireproof because

qualities. As plate-shaped construction elements, however, these panels will serve mainly for the division of rooms and the covering of surfaces. The maker claims that the board has outstanding resistance to weathering and humidity which makes it ideal for use outside, as well as near or in the ground, in wet

rooms and in critical zones of possible condensation. Established users in the UK specified Duripanel for the bottom skirts on prefabricated buildings and Gilway (as skirting boards which repel termites on buildings destined for the Middle East). At the new

Movawall has used the material for sliding partitions for sound proofing, and at Pilkington Glass's St Helen's factory the panels have been installed for ceiling linings.



The board starts with a combination of the cement and wood infused with non porous chemical agents, will take coats of paint and veneers, but plasters and finishes like a durable, fire resistant, cement product and, finally, can be coated with a special anti-graffiti finish.

those neighbouring on noisy discotheques, will be pleased to know that "sound boxes" are in the pipeline. Apart from combating fire hazard and anti-graffiti horrors (some panels are treated with a special surface) the panel's excellent sound-proofing characteristics have proved a boon in discos, Billingsgate Market the bases at a commercial radio station Clacton-on-Sea reflective ceilings) and at Radio

A sound-proof door made in alternative materials (usually a sandwich combination of, for example, lead/asbestos/steel) could cost between £500-£700— Duripanel says it can give the equivalent at a third of that

price range.

Now the panels are to be made in the UK where the British licensee is taking a site, either in Wales or Scotland. This manufacturing unit will employ about 45 people and will be geared to produce 100 cubic

metres a day.

Gone will be the expense and delay in transportation of the panels from Europe which will be distributed in this country by Mallinson-Denny (Lydney) of Gloucestershire. Duripanel will be readily available in thicknesses 6-40 mm

(maximum density panels offered as actual load bearing walls in certain construction projects) in sheet sizes 2,600 x 1.250 mm and 3,100 x 1.250 mm. Easily cut without any special tools, the panels can be painted, stained, venecred or covered with GRP. In

agricultural applications - as chicken runs, cow byres, pig styes - they can be left in their natural finish. More from Duripanel UK. The Manor Yard, Great Shefford, Newbury, Berks (0488 39 612). DEBORAH PICKERING

What's new in building

on site.

INTENDED TO minimise the danger, damage and expense of fires occurring in chemical plants, oil refineries and power stations is Darshield fire-protection system developed by Darchem Engineering of Stockton-on-Tees, Cleve-

The Darshield system undergoing a fire test (left), and the system litted around the actuator it is protecting.

Available in various grades of ceilular foam compression strips impregnated with blends of resins and refined hitumens in expanded form for compression applications and precompresed forms for insertion into an existing gap. It may be self-adhesive if

AIR destratifiers (used for

Developed and tested overe the last year at Cranfield, the result is a product which claims to be almost silent, sturdy, and not an eyesore. Apart from looking good, it is highly efficient (promising heat savings of 10 to 15 per

cent) and should pay for itself within two years of installa-

It is offered as a machine to improve living and working environments—and reduce condensation—in offices, hotels, hospitals, schools, greenhouses as well as com-mercial buildings. More from Eteq at Unit L,

Edison Courtyard, Brunel Road, Corby (053 66 68041).



Engineering contractors to the oil, eas, chemical, process and powergeneration industries. William Press Group. Tel 01-353 6544.

Sri Lanka bank job for Sunley

THE DESIGN and build package for Grindlays Bank in Colombo. Sri Lanka has been won by Bernard Sunley on a £4m-turnkey contract.

This involves building a new 7 storey premises to replace. 7 storey premises to replace:

Grindlays original office destroyed by fire in 1980. The new building will be of reinforced concrete construction-with air conditioning, two lifts. and an escalator serving the main banking hall

Gover

Memb

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forme

in ass

Kirk work CHARLES HILL subsidiary, Kirk, has new work worth over

£21m.
A new warehouse for Silent. A new warehouse for Silentnight at Nelson, Lancashire, is
valued at £764,000; seven industrial units at Bedininster,
Bristol, bring in £800,000; and
Broken Scar water treatment
works at Darlington (£367,000)
are awarded by Northumbrian.
Water Authority
An advance factory at Ingletion in Yorkshire, for EIEC is
worth £164,000; and other jubar
cover £121,000 worth at the
North West Water Authority's
drainage and pump house at
Southport, roads and drainage

Southport, roads and drainage in Clitheroe (£115,000) and a factory for Rosendale at Bacup

Leech joint venture

A £1.1M joint venture housing project will be carried out by eech Homes (North West); with Manchester City Council for the provision of more than 60 new homes on a cleared site at Old Elm Street, Chordson on

Mediock. The new units will be mixture of one, two and three bedroom homes at prices from about £15,000 to just under £21,000. They will be offered to seven different seven different categories of potential owner occupiers before being put on sale to the general

CONSTRUCTION of the Beliche Dam located in the Algarve region of Portugal has gone to an associated company of Sir Alfred McAlpine and Son, valued at 100bn escudos Constructors A. Supico SARL. (E840,000) and is for improve(E840,000) and recynfacting of a 20. Awarded by the hydraulics ment and resurfacing of a 20-services division of the Portu-guese Ministry of Habitation nacional number EN 106 beand Public Works, the contract tween Lagoas and Entre-os-Rios is worth 342bn escudos (£2.8m) in the north of Portugal. The

and involves constructing a second project, worth 94bn clay cored earth dam of about escudos (£785.000), is for re-1bn cubic metres, a diversion surfacing a 14-kilometre section tunnel, low-level discharge, over- of the estrada nacional No. flow spillway and access roads. EN 264 between Sao Marcos da The project will take around Serra and Sao Batolomeu de three and a half years to com- Messines in the Algarve.

Brignell housing schemes CAMBRIDGE BUILDER John flats. South Cambs District Brignell has received £3.3m Council has placed a £612,000

worth of new work covering five different contracts. Largest scheme is valued at £1.1m for completion of 60 flats for the County Having Assaciation in formal flat for the fourth project, worth £313,000,

Granta Housing Association in is for a rehabilitation scheme Shelly Row at the top of the at Bury St Edmunds, and the final contract, for £291,000. At Cambridge's Ditton Lane covers 15 factory starter units Estate, a £1m scheme is for the at the city's Nuffield Road completion of 62 new houses and industrial estate.

Major sulphur plant

WIDELY USED for making and C and the Alireza Groupagricultural fertilisers, sulphur has got the construction award. is considered very important in

the eastern province. gas processing plants. Deliveries wimpey ME and C has been from Shedgum and Uthmaniyah

Liquid sulphur will come Saudi Arabia where a major from three locations—Shedgum, handling, processing and Uthmaniyah and Berri—where facilities project is under way in it is produced as a by-product of

form) the product will be stored in 80 metre long pipes and taken by moving belts to a shiploader wimpey ME and C has been will be transported by heated 2,000 tonnes an hour. the engineering and procure-tanker to Berri, and the comment of equipment and bined production pumped jects is due to start at once materials for the scheme, and through a 25 kilometre pipeline completion scheduled to Jubail. This heated pipeline February 1984.

capable of loading at a rate of Work on these turnkey pro-

jects is due to start at once with

Produced and exported as

"prills" (its most marketable

Parents of teenagers, or

210, Reading, where broad-casting studios have Duripanel walls, floors, ceilings and doors.

TELEVISION

Chris Dunkley: Tonight's Choice

thing? Is it the satisfaction of seeing the philatelic expert fooled, the art historian's pretentions punctured, or just the appeal of

the practical joke? Whatever the secret ingredient John

PitzMaurice Mills' programmes always seem to have it; The

Genuine Article on BBC2 tonight deals with assay and hall-

marks. Let There Be Love on ITV is one of the recent spate of

situation comedies about the divorced, the separated or the

which seem to make them worth listening to whatever the subject. One such is Michael Oliver who presents a special

Kaleidoscope on Radio 4 devoted to the activities surrounding

the restoration of Exeter Cathedral. Another is John Hurt who,

later on the same channel, starts reading a new Book At Bed-time: Joyce's "A Portrast Of The Artist As A Young Man."

BBC 2

There are a few people with radio voices of a certain quality

widowed, all considering remarriage.

Why do fakes often have a greater fascination than the real

9.08 am For Schools, Colleges 10.90 Yen and Me 10.15 or Schools Colleges 12.38 pm News After Noon (except London) 1.00 Febble Min At One: 145 Camberwick Green 2.01 For Schools Colleges 2.00 See Hearl 3.25 Delia Smith's Chickery Course 3.53 Regional News for England (event) 1.55 England (except London). 3.55 Play School 420 Secret Squirrel 4.25 Jackanory. 449 Playhouse. 5.05 John Crayen's Newsround. 5.10 Blue Peter.

5.40 News. 6.00 Nationwide (Loudon and and South East only). 6.25 Nationwide, including

Watchdog 6.55 Doctor Who. 7.20 The Rockford Biles starring James Garner. 8.10 Panoranza

9.25 Last of the Summer Wine starring Bill Owen Peter Sallis and Brian Wilde. 9.55 Police: A look inside Thames Valley Constabulary (3) A Complaint of 10.35 Film 82 Special

11.10 Big Jim and the Figaro Chip starning Norman Rossington and Roland 11:38 News Headines. 11.40 Speak for Yourself.

All IBA Regions as London except at the following times:

ANGLIA 1.20 pm Anglis News. 12.25 Monday Film: Assession: A6 Perrin and Mr Traitt. starring David Ferrar and Maries Sorring: 5.5 University Chal-lenge, 6.00 About Anglis, 6.30 Sur-vivel: 10.30 Anglis Reports: 11.00 The Pelaca

BORDER 1,20 pm Border Rews. 2.00 Film: The Games. 3,85 Maney-Go-Round. 5:15 Bygones. 6.00 Lookeround Mon-day. 3,15 The Sound of The Reynolds Family. 6:30 Mr. and Mrs. 10.30 Thritist. 11:40 Border News.

CENTRAL

1.29 pm Central News. 2.00 The Next Marsh Mystery: Virtage Marsh Mystery: Virtage Marsh Go.00 Central News. 10.30 Laft. Right and Central News. 11.79 Paris by Night. 11.45 Something Different. CHANNEL

1:20 pm Chennet Lunchtime News, 8.00 HTV N Wher's Dn Where and Westher 2.30 10.30 Surviva The Montay Matmas: My Father's 11.30 Sosp.

tereophonic broadcast # Medium Wave

RADIO 1

5.00 am As Redio 2. 7.00 Miks lead: 3.00 Simon Sates: 11.30 Dava .e. Travis. 2.00 pm: Pauf Burnett. 1.30 Steve Wright: 5.00 Petes Powell 1.00 Steve Miles with Andy Pobles. 1.00 David Jenses. 10.00-12.00 John

5.00 am News. 5.02 Cricket Dask. 5.03 Stave Jones (S). 7.30 Terry Wogen (S). 10.00 Jimmy Young (S). 12.02 pm Cricket Dask. 12.03 Gloris Hunnford with the best of Radio 2 music and conversation (S). 2.00 Ed Stewart (S). 4.00 Devid Hemitton (S). 5.45 News. Sport. 6.00 John Dunn.

6- 6- 6-

Hobse. 5.15 Eximatelete Farm. 5.00 Chequel Report. 6.30 The Two of Ds. 9.00 Quincy. 10.28 Channel Late News. 10.35 Ledies Man. 11.05 Golding Greats. (Les Taylind). 11.05 Samey Miller: 11.55 News and Westler in Freech.

10.10 am Managing The Micro. 10.35 Speak for Yourself.

2.00 pm A Child's Place. 2.25 Maths Help.

2.40 Other People's Lives.

13.55 Star Movie: "Welcome

3.05 The Computer

11.00 Play Scho

11.25 Play It Safe!

11.35 Write-Away.

Beans.

Stranger

GRAMPIAN

9.25 am First Thing 1.20 pm North News, 2.30 Monday Matinas: "The Admirable Crichton, starting kenneth More Sally Ann Howes, Diane Celento and Ceoil Parker, 6.00 North Tonight, 6.30 Country, Focus, 10.30 Feature Film: "The Anderson Tapes," starting Seen Connery, 12.20 am North Headmas.

-GRANADA 1.20 pm Granada Reports. 2.30 Mon-day Matinee: "Sunstruck," starring

day Matines: "Sunstruck," starring
Hary Seacombe and Maggie Fitzgibtron.
6.00 Graneda Reports: 6.30 Mr Marlin.
9.00 Quincy. 10.30 Beat Sellers: "From
Nate 10" Eternity." starring Natalie HTV 1.29 pm HTV News, 12.30 Monday Matines: "The Card," starting Alac Guinness, Glyns Johns, Valens Hobson and Petula Clark, 5.15 Driff rant Strokes, 6.00 HTV, News, 30.28 HTV News, 10.30 Survival, 11.00 Depachs Mode.

HTV Cymru/Wales—As HTV West except: 12.00-12.10 pm Figiabelam, 4.15-4.20 Mr Magoo, 4.45-6.15 Sár, 6.00 V Dydd, 8.30-7.00 Report Wales, 8.30-9.00 Yr Wythnes, 11.00-11.30 World 9.00 Yr Wythnes. 11.00-11.30 Wor in piton (As HTV West, 8.30 pm).

5.40 Undersea Kingdom.

Garden. 6.50 News Summary.

8.25 Grace Kennedy

9.30 Horizon. 10.39 Cartoon Two.

10.45 Newsnight. . 11.30 Télé-montage.

9.00 Three of a Kind.

7.55 Porridge.

7.30 The Genuine Article.

6.00 Maggie. 6.25 Mr Smith's Favourite

SCOTTISH 1.20 pm News and Road and Weather, 2.00 Monday Matines: "The

Viking Queen." 3.45 Money-Ga-Round. 5.15 Emmerdate Farm. 6.00 Scotland Today. 6.40 Crimsdesk. 9.00 Quincy. 10.30 Encore. 11.15 Biran Mooga maets Niki Lauda. 12.15 am Lata Cell. TSW

1.20 pm TSW News Headlines. 4.12
Gus Honeybun's Magic Birthdays. 5.15
Emmerdule Farm. 5.00 Today South
Wast. 6.30 The Two of Us. 9.00
Quincy, 10.32 TSW Late News. 10.35
Ladles' Man. 11.05 Golling Greats (Lae
Trevino). 11.30 Barney Miler. 11.55
Postscript. 12.00 South West Weather,
Stephene Freetast.

1.20 pm TVS News. 2.30 Monday Mannee: "Letters from Frank." 5.15 Watch This Space . . . That Monday Evening Fealing. 5.30 Coast to Coast. 6.00 Coast to Coast (cont). 6.30 Depachs Mode. 9:00 Quincy. 10.30

A Full Life (John Osborne). 11.00 Thollan "A Killer in Every Corner,"

† Indicates programme in

black and white

TYNE TEES

LONDON

Tower. 5.15 Mr and Mrs.

News

7.00 Wish You Were Here ...?
Judith Chalmers looks at

days in Jamaica.

8.00 Let There Be Love, star-ring Paul Eddington,

10.00 News. 10.30 "Castle Keep" starring

Burt Lancaster and Patrick O'Neal.

and Nanette Newman.

7.30 Coronation Street.

8.30 World in Action.

.00 Hill Street Blues.

Great Yarmouth's new 251m Leisure Centre;

Chris Kelly looks at holi-

5.45 News.

6.00 Thames

Carter.

6.25 Crossroads.

ULSTER

YORKSHIRE

1,20 pm Calendar News. 2.30 Mon ay Mahnes: "Make Me An Offer," day Mahnes: "Make Me An Oner, starring Peter Figseph, Advisanne Corr and Affie Bass. 5.15 Mr and Mrs. 6.00 Calandar (Emley Moor and Balmont, admions). 6.30 Enterprize '82. 9.00 Quincy. 10.30 There's Lie North of Quincy. 10,30 There's Life North of Watford. 11,15 Brian Moore Meets

9.20 am The Good Word. 9.25 North
East News. 1.20 pm North East News.
and Looks round. 2.30 Monday Maunes.
5.15 Happy Days. 6.00 North East
Naws. 6.02 Three Little Words. 6.30
Northern Life. 9.00 Quincy. 10.30 North
East News. 10.32 Briefing. 11.15
Lou Grant. 12.10 am Travelling.

ULSTER
1.20 pm Lunchtime. 2.30 Monday
Matinee: "Botany Bay." starring Alan
Ledd and James Mason. 4.13 Ulster
News. 5.15 That Monday Evening Feeling. 5.30 Good Evening Ulster. 6.00
Good Evening Ulster (cont). 6.30 Mr
and Mrs. 9.00 Quincy. 10.29 Ulster
Waather. 10.30 Ulster Landscapes.
11.00 Face Your Future. 11.25 Bedtime.

10.02 Money Box. 10.30 Daily Service 10.45 Morning Story. 11.00 News. 11.05

Sports Dask. 10.00 Roll's Walkabout. 10.30 Star Sound with Nick Jackson. 11.00 Brian Matthew writh Round Midnight. 1.00 am Truckers' Hour (S). 2.00-5.00 You and the Nighz and the Mighz and the Mighz

Expanding the prosecutor's role 9.30 Schools Programmes, 12.00

Cockleshell Bay. 12.10 pm Rain-bow. 12.30 Do It Yourself. 1.00 News, plus FT Index. 1.20 Thames News with Robin Houston. 1.30 Farmhouse Kitchen. 2.00 Money-go-Round with Joan Shenton and Tony Bastable. 2.30 Monday Matinee: "My Father's emerged an issue of more than stances. House." 4.15 Dangermouse. 4.20 Graham's Ark. 4.45 The Book passing moment. Just as Parlia- varied downwards. ment is embarking on the passage of another Criminal Justice Bill (the fifth in 20 years) the Andrew Gardner and Rita whole question of the role of the prosecution in the senten-6.25 Help! with Viv Taylor cing process seems ripe for

debate and reform. The issue has been prompted by the sustained campaign by at least one MP to get Judge Richards to reconsider his sentence and impose what is regarded as a more realistic penalty of imprisonment instead of the £2,000 fine imposed. (Only last Friday the Lord Chief. Justice restated the courts' policy toward those convicted of rape: other than in exceptional circumstances, they, should receive

prison sentences.) 12.25 am Close: Sit Up and Listen with Jack Jones. Parliament has provided that within a month of sentence, the Crown Court may vary or rescind any sentence that it has passed. But that provision has been interpreted by the appeal court as giving the judges the power only to amend their sentences after a slip of the tongue or a slip of memory. It does not allow them to revise their

sentences upwards. Before the reorganisation of the higher criminal courts, with the abolition of Assizes and Quarter Sessions in 1971, judges were free during the period of the Assize or a Borough quarter sessions to call an offender back and deal with him in a different way. At the end of the Assize or sessions the criminal calendar, which listed all the prisoners brought to trial and the sentences passed on them. was signed by the judge. From that moment, the power to alter any sentence vanished. The power was nevertheless

AMID MUCH fuss and pother frequently exercised, and theoover the sentence passed by retically it enabled the sentence criminal process into two able. But if the judge errs on Judge Bertrand Richards at Ips- to be increased or decreased. In distinct parts, the ascertainment, the side of leniency there is wich Crown Court on the man practice, the power to increase who pleaded guilty to raping a was never exercised, save in young hitch-hiker, there has wholly exceptional circum-But sentences were

There is a story that circulated among lawyers of an attracted worldwide admiration Assize judge who often imposed swingeing sentences upon offen- accused; indeed many claim ders, which he hoped would be that the English system is alwidely reported and thus act most too fair in the safeguards as a powerful deterrent to contemplating malefactors. Then, at the end of the Assize

the judge would unostentatiously - even surreptitiously alter the sentences in the calendar, as he signed it. to the correct tariff; the corrections not being publicly declared were not publicised.

This approach discloses the dilemma of all sentencers, proclivities of the judge

(even over-elaborate) procedures are built into the criminal trial that have for their fairness to the it provides against the possibility of a wrongful conviction; the rules as to the admissibility of cogent evidence are a prime

example. But then, as soon as the verdict of guilt is recorded, the system drops into a lower gear. The prosecution drops out of the process, and a dialogue, more or less thorough according to the

THE WEEK IN THE COURTS BY JUSTINIAN

While they wish to mark out society's disapproval for the criminal act and pass a sentence that will have the maxitial aim of the criminal justice mum deterrent effect, they do not wish to inflict upon the missystem as reflecting society's need to deal with its offenders, creant and his family a harsher penalty than is strictly required, particularly when the cost of imprisonment is so high and the prisons are grossly over-

crowded. with Nowodays, public awareness of what is being done in the name of society, the courts are less able to indulge in this kind of sleight of hand. Their sentences have at one and the same time to reflect both approaches, leaving it to prison administrators to mitigate the effect of imprisonment by the use of limited release powers in the form of

remission and parole. It is a curious feature of our

towards the question of sentencing, takes place between the judge and defending counsel. Penal sanctions are an essen-

and yet at the moment of maximum concern the prosecution ceases to play any role. The defence, in making its stiffest opposition. plea in mitigation, can say anything without fear of contradiction, and the judges react to this situation by taking on the tor of the State. No longer can the Olympian aloofness of the

judge, adjudicating between rival contenders, be preserved.

pass sentences that are in-

appropriate.

system that we divide the of trial judges is always availof guilt or innocence and the no means of correcting the disposal of the guilty. For the error, which is what prompted trial of the offender, elaborate some commentators to seek a revision by Judge Richards of his sentence of a fine in the Ipswich case.

Is there not a case for allowing the prosecutor to play at least some role in the sentencing process without appearing to be persecuting the offender? In the early days of the Court of Criminal Appeal, from 1907 until the 1950s, the Crown was represented in appeals by convicted persons, and even was heard to advocate an increase in the sentence, which the appellate court had the power to do until the mid-1960s.

It has become transparently obvious that penal administrators have a vital interest in the sentencing process and yet have little ability to affect the level of sentencing by the courts, except by persuasion or ulti-mately legislation. Judges would be materially assisted if someone was given the right to be heard on behalf of the Home Office, in order to air publicly at the sentencing stage the view of the administrator.

Against this change is the deep-moted aversion of the legal profession (and, one suspects, a large section of the public) to the Crown having its say on the proper sentence to be passed. Any proposal for change would meet with the

Since the Royal Commission on Criminal Procedure was not generally asked to report on the trial process it made no role of advocate for and protec- recommendation about sentencing when it proposed major reform of the prosecuting authorities.

But if we are to move Thus judges may over-react and towards a more centralised system of prosecuting, the time may come when the prosecutor's If their sentences are too long role in the courts, more nearly the right of appeal and the controlled by a single national ability to correct the excesses prosecutor, can be redefined.

Mr. Pickles should shine at Fontwell

UNLESS the weather suddenly deteriorates again, racing will resume today at Fontwell, Sussex, after the leavest spell for the sport since the winter of 1962-63.

While bad weather has prevented the Newcastle meeting. Derek Hubbard, clerk of the course, reports no problems at direct beneficiaries from the resumption are likely be the local East Grinstead trainer, Michael Bolton, who is before the most recent freezeout to celebrate his 48th birth- up.

Smull, Di Scett Supported to celebrate his afternoon's far longer admittedly poor opponents on and his principal rider, Ben This afternoon's far longer admittedly poor opponents on a recovery mission at the last de Haan. They rely on the trip, in even more holding a recovery mission at the last

RACING BY DOMINIC WIGAN

lightly raced Mr Pickles in the opening 11-runner Shripney Selling Handicap Chase. Off the course for the whole of last season because of a Fontwell. There the first two training problem, this eightyear-old, who is also owned by Bolton, ran his best race in a

Folkestone, will serve Mr problems, barring a repeat of Pickles well and there seems the blunder which cost him a little doubt that he will make chance of victory on his debut a bold bid. .Now that Another Generation

and Joe Sunlight have been pulled out of the opening division of the Burpham Novices Hurdle, the way looks clear for Dr Steve, a stable companion to the now well-established Prince Northfields. A disappointment long while at Folkestone just on his debut for Mr Moonraker's trainer. Mrs Nadine

and may conceivably win a place in the Daily Express Triumph Hurdle line-up.

ground than that found at meeting here. He will have no

FONTWELL 1.15-Mr Pickles* 1.45-Dr Steve*** 2.15-Slaney**

2.45—Spikey Bill

3.45-Royal Swan

3.15-Bash Street Kid

RADIO 3 6.55 am Weather, 7.00 News. 7.05 Stave Jones (S). 7.30 Terry gen (S). 10.00 Jimmy Young (S). 2 pm Cricket Dask. 12.03 Glorie mitfold with the best of Radio 2 int and conversation (S). 2.00 Ed Nart (S): 4.00 David Hemitton (S). News. Sport. 6.00 John Dunn. Soccer Special. 8.00 (VHF only) on 2-(S): 9.00 Humphray Lyttlewith The Best of Jazz (S). 9.55 New Records (S). 4.55 News. 5.00

RADIO

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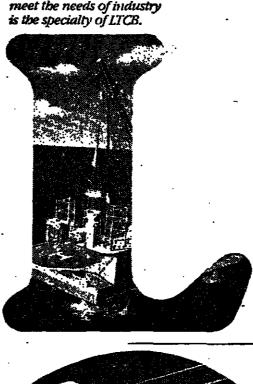
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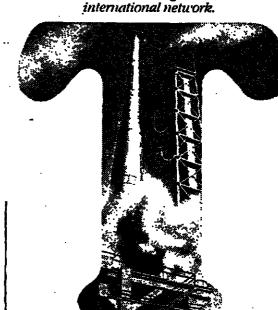
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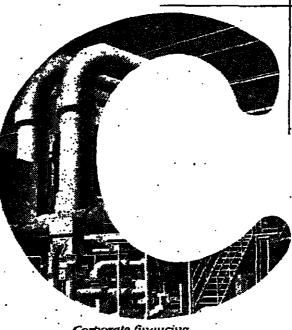


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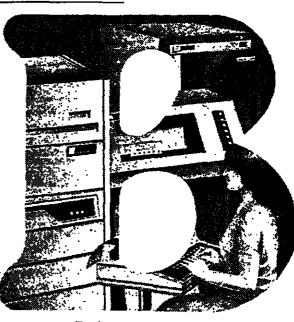


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The dilemmas of an extended flight path

THE MANAGEMENT PAGE

Moving into international operations has presented Air Zimbabwe with a series of problems. Nicholas Leslie reports

IN AN era when wide-bodied

done so since it first began its non-stop service to the UK in any airline. Air Zimbabwe has April, 1980, just before independence, and will prob-

financial necessity — ways and international routes. A very means can always be found to operate these expensive aircraft even if, like Zimbabwe, a Air Zimbabwe is opening up country has an acute shortage new routes. of foreign exchange.

Air Zimbabwe decided, how-

ever, that it would be more prudent to test the level of passenger demand before committing the airline to capital expenditure of a magnitude that would not only be daunting but would totally alter the pattern of financing and operation that had been adopted during 15

At the same time, its decision can perhaps be seen as an act of faith in the country's future. For the belief clearly is that if Zimbabwe remains politically stable and its economy expands, Air Zimbabwe should be able to move into line with other national carriers, yet remain on a commercially viable basis.

the transitional years-1979-80 and 1980-81—to full independence of the country. Air Zimbabwe's growth reflected its move into the inter-national arena. Passengers national arena. carried rose from 365,771 to 402,274, but passenger kiloflown jumped from 258.47m to 431.4m and cargo of Zimbabwe to tourists is high tonnes per kilometre flown rose from 2.5m to 5.14m. The 1979-80 profit was Z\$330,489. The 1980-81 results have yet to be

IN AN era when wide-bodied aircraft are the automatic choice of flagship for national airlines, reality, however. The airline is and more are planned — preroute.

Air Zimbabwe operates air travel market. Costs are haul routes of over 10 hours. ratrow-bodied Boeing 707s on rising inexorably, particularly But each intermediate landing for fuel, which represents one and take-off cap for fuel, which represents one and take-off can endanger the of the biggest single costs of profitability of such routes.

To date, Air Zimbabwe has undoubtedly performed remark-ably well. Starting with one Boeing 707 leased from South Africa, it began in April 1980 a service three times a week from Salisbury to London's Gatwick Airport, Today, it has three 707s which it bought early last year from Lufthansa, the West German airline, for \$11m (including spares)

with a loan raised overseas. There are now four flights a week, one of which includes a stopover in Frankfurt. The West German service was seen as a logical expansion because Frankfurt connects with most places of importance throughout the world, says Mervyn Eyett, general manager of Air Zimbabwe.

The businessman is seen as the cornerstone of passenger flying time of 104 hours, non-growth—as with so many air- stop. International regulations lines—though the opening up require a back-up captain and of Zimbabwe to tourists is high flight engineer on 707s for any on the list of priorities. As flight over 10 hours' duration. Eyett remarks of the Frankfurt And, as with other operators, stopover: "Germans are great staff represent the second travellers in East Africa; I hope biggest cost the airline has to that a few will extend their bear after fuel.

one carrier has been studiously attempting to establish itself, at sents something of a dilemma. travelling an independent a time when the growth has Air Zimbabwe has adapted two

While these aircraft are being used, therefore, the airline's priority must be to concentrate independence, and will probably continue to do so until 1983 at the earliest.

Its avoidance of wide-bodied aircraft was based on commermal aircraft was based on commermal aircraft. Certainly on cance in view of the fact that modern aircraft, certainly on cance in view of the fact that aircraft international service, says Eyett. Such an approach takes on even greater significance in view of the fact that aircraft certainly on cance in view of the fact that aircraft international routes. A very for its domestic fuel supplies than any airline operating to or from Africa. This is a result of the high costs of transport ing oil to this landlocked country. The airline hopes the situation may improve when the oil pipeline from Beira, in Mozambique — out of action since shortly after UDI-

> Nevertheless, Eyett maintains that the London route is operating profitably. Though pay-loads were lower than expected in the early months it has for several months now been achiev-ing passenger payloads of at least 75 per cent capacity in both directions. Cargoes have not been as healthy, particularly on outward flights from Salisbury, but Eyett believes there should be a steady improvement. This is cleary of significance since 707s are passenger/cargo carriers rather than predominantly passenger

One unfortunate and costly aspect of the distance between Salisbury and London is the



THE major programme being undertaken by Air Zimbabwe is being tackled against a political background that requires a rapid integration blacks into operational, administrative and top management positions that have previously been the domain of the whites. In part, this has been achieved

with apparently little upheaval or unrest. For example, according to Mervyn Eyett, Air Zimbabwe's general manager, the transition from whites to blacks in the accounts department was achieved within a few months of independence.

Recruitment for reserva-tions and traffic handling staff has also been predominantly among blacks. Equally, the number of black stewardesses has risen rapidly, though this has largely been a case of new recruitment necessitated by the launch of more regional international services

Eyett says it is recognised that if Air Zimbabwe is to com-

pete on equal terms with other

national carriers like British

Airways and Lufthansa it must

eventually move into wide-bodied aircraft. The cost,

though, is enormous running

into tens of millions of dollars for not only the aircraft but for

an engine testing cell and other

Various strategies are there-fore being considered to defray

the expense. One option is

leasing. Another is a partner-ship with a nearby African country in a similar economic position to Zimbabwe—a course

of action, though, that revives

back-up equipment.

Frankfurt stop, international flights were generating some 33 memories of the difficulties that finally split East African Airper cent of total operating revenue, while 67 per cent was

Meanwhile, even the cost of Air Zimbabwe's training proregional routes to Zambia, Malawi, South Africa and gramme is a financial strain which the airline may try to ease by persuading other air-lines, probably in Europe, to help train its apprentices and even pilots.

Training is crucial both to the airline's ability to expand route with more non-stop flights than BA (which has only two) and to its prospects of gaining revenue by servicing aircraft for other airlines. At present, and a standard of comfort and it provides only transit checking for BA and Lufthansa, though it does have other engineering work such as servic-ing Dart engines for Air

The impact of international operations on Air Zimbabwe's revenue has been swift. Before the introduction of the fourth new terminal would seem to service to London and the

Personnel priorities

Indeed, Eyett says that stewardess recruitment presented one of the biggest problems in meeting the schedule for the April 1980 launch of the Salisbury to London route.

Where anxiety does undoubtedly exist is in the technical areas — ground crews and engineering backup—and fhe flight crews. There is a conviction among many whites that it is impossible, in the time scale contemplated to train blacks up to the level of technical competence they consider is necessary to keep the fleet of eight Viscounts and three jet-powered Boeing 720s in service and to take on Boeing 707s, and, eventually, wide-bodied aircraft.

This view has been fashioned partly by 15 years of UDI and

of war, during all of which

time the ageing Viscount turbo-prop powered aircraft were kept in service without the benefit of any new spares; everything had to be made in As a result of all this, an elifist altitude was

the staff. A large number of the air-line's technical staff have

already voted with their feet on the integration programme and have left the country. This could well affect Air Zimbabwe's training schedule, for while young blacks and whites are now being taken on as apprentices on a 50-50 hasis the total will obviously be limited by the number of qualified people available to

Among flight crews, there is

earned from domestic and

Kenya. Revenue from interna-

tional flights now exceeds 45

Until Air Zimbabwe gets its

wide-bodied aircraft it is en-

ticing passengers on the London

service that it reckons more

per cent of the total.

anxiety rather than resentment about the possibility of appointments to captain status of anybody, be they black or white, who does not have the number of hours' flying experience that has in the past been the norm for such a position—generally around 10,000 hours. But, again, this attitude must be seen to be caused partly by the isolation of the former Air Rhodesia and the fact that it is inherent among air crews who have for the most part long-service records.

Now, a pressing need for more pilots and flight engineers may lead not only to the appointment of younger, black pflots to senior posi-tions, but also to older white pilots within a few years of retirement being pas for training for wide-bodied aircraft-with a consequent effect not only on status but

be a priority—though this may not be so for a government with a whole host of priorities and limited funds.

Meanwhile Air Zimbabwe with its smaller aircraft would seem to have the advantage in terms of the speed with which its passengers can be handled addition to the frequency of its flights.

Eyett predicts that a wide-bodied service will be intro-duced sometime in 1988—well in advance of noise regulations that may force 707s out of Europe within the next five than matches those for like years.

classes of passenger in other airlook hard at the economics of a But the one stumbling block move to wide-bodied aircraft to growth may be Salisbury and is strongly of the opinion Airport. Facilities are clearly that the frequency of services not designed to handle the 350 would probably have to be reor so passengers disgorged by duced until a growth in jumbo jets and on this basis a passenger traffic justified an

Management abstracts

The board and compensation. F. W. Cook in Compensation Review (U.S.), No. 2/81: p. 37 (5 pages, table)

Describes the role of a board compensation committee; outlines the relationships, job characteristics / responsibilities, and traits of a compensation director, recommends a schedule for, and the content of, commit-

Alternatives to a visual display unit. K. Jones + others in Computer Weekly (UK), 28 May 81: p. 17 (3 pages, illus,) Three articles describe methods of computer data input which are said to eliminate the need for a visual display unit: 'hand-print' data entry pads, optical character recogni pads, optical characteristics, and the use of a buresu; each article expounds the virtues of a particular technique, each of the first two mentions products, and the third concen-trates on the security of confidential data.

Computers as terrorist targets.

A. Segerdal in Computing
(UK), 11 Jun 81: p. 20 (2

pages)
Discusses the possibility of terrorist attacks on EDP instalia tions, and relates experiences in Continental Europe, presidts advice from a police crime prevention officer.

Encryption, I Berkovitch in Business Systems and Equip ment (UK), Jun 81: p. 28 (11

pages, diags.)
Defines encryption, i.e. enciphering data transmitted through electronic changes, vulnerable to eavesdropping, explains how it works and reports on Trustee Savings Bank's investigation into apply. ing it to their each dispenses in order to prevent unsufficied eccess to oustomers' account

Controlling computer costs. J. E. Finney in Journal of Accountancy (U.S.), Apr 81: p. 63 (41 pages)

Suggests that the best hope of reducing costs in a centralised computer department is to make users aware of the costs of the services they take; discusses ways of charging departments, and favours a method which uses prescribed rates per unit of time for each service or cost centre.

These abstracts are condensed from the abstracting journals published by Anhar Management Publications, Licensed copies of the original articles may be obtained at £2.50 each (including VAT and p and p; cash with order) from Anbar, PO Box 23, Wen-

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Profitability and Productivity 16-17. Fee: £160. Details from Department of Management Science, Imperial College, Exhibition Road, London SW7

World Coal in the 1980s London. February 2-3. Fee: £218 (inclusive of VAT). Details from European Study Conferences, Kirby House, 31 High Street East, Uppingham, Rutland, Leicestershire LE15 9PY. The Factory of the Future, Brussels. February 8-10. Fee: BFr 32,000 members, BFr 36,000 non-members of the American Management Associanon. Details from Management Centre Europe, avenue des Arts 4, B-1040 Brussels, Belgium.

Management of Innovative Projects, Slough, March 8-12. Fee: £345 (plus VAT). Details from the Registrar, Urwick Management Centre, Baylis House, Stoke Poges Lane, Slough, Berkshire, SL1 3PF.

The Directors' Workshop, Hen-ley. February 24-26. Fee: £395 (plus VAT) members, £445 (plus VAT) non-members of the Institute of Directors. Details from Education Director, Insti-tute of Directors. 116 Pall Mall, London SW1Y 5ED.

Growing Pains—resolving the problems facing international oanks of establishing and developing a physical presence in the City of London, London, February 25. Fee: £65 (plus VAT). Details from Office Planning Consultants, 6 Mercer Street, London WC2H 90G.



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Elizabeth Hali

Eight Decades

by DOMINIC GILL

The decades of the 1950s, enough, but sketches all. 1970s and the two new years of the 1980s were those represented at last Friday's concert the third of five promoted on the South Bank between October and May jointly by the BBC around a point than go-directly and the London Orchestral Con- to it. But it's a fine work none

In theory, it looked to be a promising programme; three recent pieces; including a premiere; by three British composers still in their early thirties framed by a pair of key works from the 1950s by Elliott Carter and Luciano Berio. In the event, it was certainly not the penformances by the London Simonietta - all without exception of remarkable energy and high polish which prevented the evening from catching fire. The fault lay rather with the programme trythmic devices, and leaves all of its developments tantalisingly unresolved. Attractive, if essentially soft-centred John itself, strong on paper, but in sound curiously without sequence or centre— a pot pourri rather than a contrasting integrated whole.

But sensitive new music pro-

ramming in any case, at the best of times, is a thankless task. It would have been difficust to predict how powerfully the concert's opening work, Carter's early sonata for flute, oboe, cello and barpsichord, would overshadow the rest of the evening and how nothing afterwards would match its incisiveness and broad lyrical sense. The sonata new principal oboe, Gareth is a marvellous work, a muchneglected landmark both of its an "elaboration" for ensemble decade and of Carter's ocuvre, of an earlier solo Sequenza reminous in its confidence. Be- and like all the Chemins, disside it the four succeeding pieces, including the Berio, seemed no more than scrapbook musically interesting, as the essays, worthy and decent original.

Wigmore Hall

Brüggen & Tilnev

by PAUL DRIVER

Bruggen is accepted as being ness in the Corelli. as part of the Early Music Network -- the Wigmore Hall was packed almost to the exclusion of music critics. And there was no question but that the enthu-siastic audience was rewarded mun biavic vibrancy and flair. One's only real criticism was that the programme was too slender: four enjoyable items imparting a light and modest tone perfectly. in keeping with Bruggen's approach to virtuosity.

The theme was the development of the baroque sonata; exemplified in a progress from six assorted little canzone/ sonate by unfamiliar - 17th-century composers, through an arrangement of a Corelli violin sonata (G minor, op 5 no 7), the wonderful E minor harpsichord sonata of C. P. E. Bach, to another arrangement, Mozart's G major sonata K 301, originally flute and harpsichord in fact. for violin and fortepiano. The first two parts were a charming. commanding possibilities of the hating composer would surely recorder family, leaving no room have approved.

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Even Nigel Osbarne's I am Goya, the best of the bunch by far, and by now, after five years, the best known, seemed a shade more diffuse than I remembered it --- more inclined to wander certs Board under the collective theless, elegantly made and title of Music of Eight richly coloured, and sung ideally by a darker, more ideally by a darker, more granite-timbred bass voice than David Wilson-Johnson's, it deserves aniestablished place in the repertory.

Jonathan Lloyds's Waiting for Gozo, a new Sinfonietta commis sion, was a pretty, slight essay for 13 instruments, 13 minutes long, built from requiring bluestinged three-note motifs. It explores some nice, brittle tex-tures and some interesting rhythmic devices, and leaves all tially soft-centred. John Casken's Firewhirl for soprano and ensemble, first heard at the Bath Festival two years ago, is

a busy swarm of a score, crowded with contrast and urgent gesture, which seems to me to cry out for some ruthless cutting and revision — if only the better to reveal the good things it undoubtedly contains (though could it ever survive such a cumbersome, clotted text as the poem by George MacBeth which it attempts to set?)

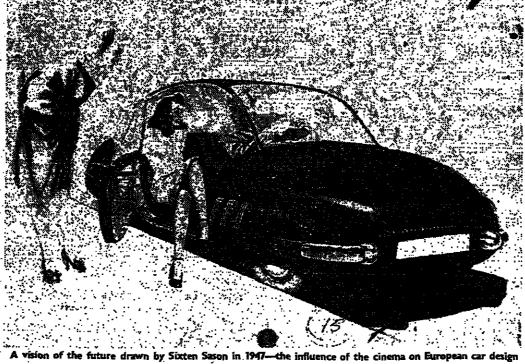
Berio's Chemin IV, beautifully played by the Sinfonietta's Hulse, is like all the Chemins appointingly never quite as taut or technically provocative, or as

The Dutch musician Frans for thoughts of inappropriatethe world's finest recorder Comm Timey's account the world's finest recorder Bach sonata did make one player, so one need not have want to cavil. Its first movebeen surprised that for his reci- ment had correct buoyancy but tal with the harpsichordist Colin no excess of neatness, as if to Tilney on Thursday - a promo- imply that the rough exprestion of the Early Music Centre sive daring of the music could as part of the Early Music Net be compounded by roughness in the execution, whereas the reverse is true. He was alive to the wilfulness and push of emotion in the slow movement the Foundation is not to add and then his finale was marred to the attractions of the V and A by further lack of absolute but to provide facilities for se (the only kind) though ist spoke.

The Mozart arrangement

was the joy of the concert. The partnership was impeccable, felicities like Brüggen's aqueous alto phrasing (now he was playing on a transverse flute) and Tilney's delicate sprinklings of treble tone being mutually respected as well as individually displayed. The sonata was more enchanting thus than it ever is on violin and piano, and the combination of flute and harpsichord is a more successful one

his new realm. The new gallery is a wonder- taste have made worthy. than flute and piano. Mozart began writing this sonata for so Mr Brüggen has thwarted him. But if he could have demonstration of the under-bathed in Brüggen's himpid attendents at the opening looked missed an opportunity. appreciated dynamic, tonal and world of sound even the flute- like the staff of a well known First, he should con-



THE ARTS

Architecture

Designing ways by COLIN AMERY

When the poet Cowper wrote white-with-boiler-suit his bright designs" I don't very comfortable in this new imagine he was thinking of room and puzzling to understand Terence Conran, or even of the Victoria and Albert Museum. wondering what to do with all the money he has made from stripped pine "—and so off to all the bright designs be has Habitat...
been selling at Habitat shops.

The period trendiness should

He has now taken over from Sir Roy Strong as a latterday Prince Albert and opened his design museum and study centre in the conner boiler-house of the V and A. Prince Albert and his diligent partner Sir Henry Cole had similar aims to those of Mr Conran when they planned the South Kensington Museums. Prince was aware Britain was losing her industrial ascend-ancy over other European countries and he never intended the V and A to be another High Art Museum but a place where students and manufacturers could look at and emulate a rich variety of objects of the highest quality.

Mr Conran has put some of his profits into The Conran Foundation which is an educational charity devoted to the improvement of industrial design. He has refurbished the yard between the main museum building and the Huxley building, with an independent entrance on Exhibition Road, as the first base for the Foundation and as a home for a series of temporary exhibitions. It is at the V and A but not of the V and A. The purpose of designers and manufacturers: indeed Mr Conran said last week that the V & A and the Conran

could also attract the public in

ful period piece. It is a long time since I have spent so long in an all white room, with white tiles on the floors, while walls and white wattle ceiling. The London hairdressers - indeed

about a God who "treasures up some years ago. It is hard to feel why the whole place has been designed like a giant car-wash. Mr Conran has been quietly As one visitor remarked to me "it makes you long for a bit of The period trendiness should

not put you off because the serious and will in time manifest itself in visually more stimulat-ing ways than the first exhibition. This first show is historical. It bears the title Art and Industry, A Century of Design in the Products We Use and is cleanly designed by Alan Irvine, the doyen of exhibition designers.

It is really a series of bio-

graphical case studies of a dozen or so designers and their products, and it claims to show how the artist moved his sphere of influence from the studio to the shop floor. This, it seems to me, is the great fallacy of the whole enterprise. The artist does not get a look in at the Boilerhouse—the people exhibited and their products are the designers who have succeeded in industry, they V and A's boilerhouse, in the are not artists. We all want to see well designed and pleasing goods but they are not going to be the things that move or

Artists may be moved by the wonders of the aeroplane or the beauties of streamlining, by the idea of speed or the "keen unpassioned beauty of a great machine" but an efficient engine or a vigorous vacuum cleaner are likely to leave their souls untouched. It seems to me that "it's not for the general Foundation have got themselves into a muddle. The last director Despite the solemn intentions of the V & A was keen to keep behind this project there is no the decorative arts alive by doubt that London has acquired introducing more "high art." a powerful new design centre. He was right. The presence of that could be an important influ- one Donatello relief speaks to ence on manufacturers, but the mind in a way no telephone or coffee table can ever approach. Designers should be large numbers. Mr Conran approach. Designers should be doesn't seem to mind the public in and out of the V & A as a popping into Habitat so he matter of course but not to look shouldn't discourage them from at contemporary objects but to see the things that time and

> feel that he has his wires crossed in this project and has

First, he should concentrate on what he really understands, Ricci Burns was on to the all- which is why some designers are £10, £6 and £3.

good and some are bad, and then spell out the reasons in single syllables. Then he would provide us with a useful lesson. It is unfashionable to say that some things are good and some are bad but it is just what is needed. Manufacturers need to be told. Look, for example, at the design of British cars today—why are they so often inferior to the Japanese designs? What belp is the display of an isolated elderly Saab

in the current show? The second thing Mr Conran should do is to put his exhibitions into the High Street. Isolating design in the remote glossy museum world is not enough. Habitat Design Centres would bring the message home to the customers and not debase art or elevate design beyond its tolerance.

There designers present in this first show. The work of Peter Behrens (AEG Turbines), Norman Bel Geddes, Harold van Doren (kings of streamlining), Raymond Loewy (duplicating machines) and the Swedish modern designers are all here. The inside story of the Boeing planes also makes interesting reading.

The British are not likely to be much in evidence in the future as Mr Conran wants to show how the general level of international design has been achieved. Sony from Japan are showing their wares soon and the windows will be opened on the secrets of German electric razor design. The planned Cortina will also be seendemonstrating the Foundation's commitment to the future. Co to the Y

pleasures of the process of design but don't be seduced into a muddle. The last director into thinking that skill can be equated with art. There is a real danger that the Boiler-house Project will live up to its apparent to British audiences appearance and become an echo chamber for designers talking to themselves. Art and Industry continues at

the V and A until March 2.

Steaming ' for Poland

The company of Steaming is I am not, although this may to give a special late man be hard to believe, against Mr charity performance on Tuesday, February 2 at 11.30 pm at to give a special late night the Comedy Theatre. The proceeds will go to the British Red Cross Fund for Polish Relief.

Tickets are available from the Comedy Theatre box office at

Covent Garden

Manon by CLEMENT CRISP

Lescaut an unshaven scoundrel.

and I have never before been

was lost in predatory ferocity. The squabbling between the

whores seemed broader than

performances looked undiscip-

lined: peither Wavne Eagling

Michael

Coleman made

Saturday night in an uneven performance suggested how easily familiarity may breed aware of him rifling G.M.'s caricature among interpretative pocket during the first scene artists. The principals of the in des Grieux' lodgings; the occasion-Merle Park and opportunist charm of the role Wayne Eagling as the lovers; Michael Coleman and Monica Mason as Lescaut and his heretofore, and certain dance mistress—are an assured quartet; the company has shown that, in MacMillan's full-length nor Michael Coleman were at spectacles, their ensemble playing is vital, and is always vitally well done.

indulgent air. I do not recall

their cleanest in technique. though the stretch of Mr Eagling's line, and the vulner-Yet I noted a lack of ability of his emotions as des felt herself racing headlong coherence, a tendency to Grieux, show us the continuing into oblivion, and Mr Eagling elaborate portrayal to a point of self-parody (rather than innocent who finds himself her. reduce it to an essential image dragged headlong into suffering of character) which gave the and crime.

presentation an over-ripe and I sensed only intermittently the dramatic impulse behind

The return of Manon to the snuff-box and centre-stage sexuality that makes her so Royal Ballet repertory on mugging, from supernumeraries. irresistible to every man who sees her. Yet there has rarely been a more passionately yielding account of the effulgent duet which interrupts des Grieux' writing of the letter to his father. The performance reached a magnificent peak here as the lovers were impelled on a long, swooping wave of feel-ing: like surfers, they coasted gloriously on its crest.

Nothing in the rest of the evening came near this in intensity or involvement until the final pas de deux, where Miss Park's faltering steps had a terrified momentum, as if Manon

I record with pleasure that the recent super-charged revisions by John Lanchbery to the score were not in evidence; the trio of Gentlemen looking Merle Park's view of Manon. In the original Leighton Lucas quite as Dutch Doll-ish in their the first scene this Manan arrangement of Massenet is maquillage before; nor such appeared all too conscious of her much to be preferred, as Saturdesperate fuss with handker- powers, with none of the bloom day's orchestral performance chief and grotesque make-up, of girlhood or that innocent showed.

Albany Empire

All Who Sail In Her

or absence out front of The

The opening of the new Albany in Douglas Way, Dept- views, the VIP list, the presence ford, is a remarkable achievement by all concerned. The old place in Creek Road was destroyed by fire in 1978 and rebuilt in five months. In 1980 the resident company, the Combination, was a victim of the Arts Council cuts, but £3m was raised to fund a new venue that. while it may indeed resemble a Swiss pre-natal clinic " from the outside (according to the new show), is, from the inside, more like an alternative and friendly amalgam of Ronnie Scott's and the Talk of the

Upstairs there is a large bar with hot food, downstairs seat-ing at café tables for a couple of hundred. The idea of John Turner's cabaret is to exploit those feelings of paranoia, anxiety and anger that have carried the project to its weight of historical pleading. splendid emporium for too long. triumphant conclusion. Hence Much better to do away with

Committee. This latter body may be the charitable patrons of Deptford 100 years ago or the Arts Council assessors of today. The historical parallels with Deptford's popular entertainment history are superficially laboured in the show's second half, where Debby Bishop's contemporary escape from the petrol pumps to self-fulfilment as a gifted rock singer is rewritten to trace her progress from the local slaughterhouse to a post of servant in a large house. These are by far the most embarrassing sections of the show, even though, para-

entity. dense to hold up under the 'template staying away from this

tion, belatedly and mistakenly,

starts looking like a theatrical

constant reference to the re- all that and allow the performers their freedom. The outstanding member of the quartet Strip gang, who has developed quite astonishingly since I last saw him into a top-class comedian: relaxed, very fast, athletic and technically accomplished. His take of trying to break down a New York audience with traditional banter ("Anyone here from Tunbridge Wells?") had me gasping with laughter.

His presence alongside John Turner's painfully unfunny material is all the more welcome for being so delightfully incongruous. The same is true of Jane Darling, a wonderful doxically, Mike Laye's produc- jazz dancer, who manages to send up Les Sylphides as well as everyone else. The show is mess, but a promising one, The writing is not sufficiently and I shall certainly not con-

Dmitri–Clown

To those that love the genre, plates, and a cut-out heart, a skilful and appealing clown can do no wrong, Dmitri, a native of Switzerland, is in London for the current International Mime Festival. He bears impressive credentials, having worked with Marcel Marceau and Louis Maisse at the Cirque Medrano in Parisone-time stomping ground of Buster Keaton. Similarities with as he flaunts his well-practised ineptitude in the face of the most curious physical conundrums. His flexile responses would do credit to the finest acrobat, while his white-faced smile soon wins our hearts. Clad in floppy jacket, red

tights and knickerbockers he pads in with a tiny ukulele. Almost immediately, his plectrum slips inside the sounding board and he scuffles off to pick up a heavy wooden trunk full of useful implements. These comprise among other oddities several spare plectrums. a monster rolling-pin, the inevitable bamboo rods and spinning as much the result of personal

particular act is especially impressive with a spinning plate on each side. Just in case the viewers a trial turn with the odd happy surprise. bamboo rods. There were no undiscovered theatrical talents tiny box. At last he opens it at the Shaw on Thursday, but and takes out an exquisite minithere was one unlucky woman squeezebox from which he with a talent for tolerance, as draws out the sweetest renderwith a talent for tolerance, as the visiting performer whipped ing of "Plaisir d'amour" her handbag, threatened to pull accompanied by those batting it apart and tie it in they little eyelids and that delicious manic knots. By turns smug, irritated, amazed, coy and desperate, this cheeky chappie could charm his bigger squeezebox and plays way into an Amazon's garden

Then something went wrong.

predeliction as the innocuous My favourite is the rolling interval drinks. He wanders on pin. The poor wee fellow all but for part two with a trolley full rolls himself into thin air and of instruments and visual gags then proceeds to leap into a make way for the aural variety, splendid elbow-stand while There is no doubting Dmitri's wheeling along the top of the musical virtuosity, but the trunk. Other delights include beauty and the comedy were lost oral juggling, which looks pretty to me and I began to feel uncomfortable as hidden yellow increasingly sorry for the sad ping-pong balls continue to pop little lad. This may not be unout of the side of his mouth. This intentional, but the mood of victim becomes horridly infectious and ultimately, dare I say it, tedious, However, this clown spectators consider it is all too is nothing if not disarming, and easy, Dmitri offers front row even repetition throws up the

On the top of the trolley is a grin across a gash of mouth. Then he picks up another. the two simultaneously, as they dangle from his hands like ugly black caterpillars.

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Feb 1-13 Eves 7.30. Mats Weds. Sats
2.30. Some seats avail for today's perf. COLISEUM. S 836 3161. CC 240 S258.
ENGLISH NATIONAL OPERA. TOMOF
7.30: LA TRAVIATA. Wed 7.30: DIE
FLEDERMAUS. TAUIS. SET 7.00: AIDA.
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104 balcony seests avail from 10 am en
day. COVENT GARDEN. 240 1066 5 (Garden-charge CC 836 8903). 55 amphisests avail for all

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9837. Grp sales 379 6061. Em 7.45.
1. price Mat Today 3. St 5. 2. 85.
SIMON CALLOW and PATRICK RYECART In - The Beastly Beattings of
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Enjoy ore-show suppor at Cale Charto
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9832. Direct from Braadway return to
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9822. Opening February 11 at 7.0.
Reduced orice previews from Feb 9.
Subs evpt 7.30. Map Wed 2.30. Sets
4.0. PENELOPE KETIS. ANTHONY
OUAYLE. TREVOR PEACOCK in
HOBSON'S CHOICE A comedy by Harold
Brighouse. Directed by Romain Eyrc.
Advance box office spen from. MER MAJESTY'S 930 6606-7. CC 930 4025-6. Grp sales 379 8061. Eves 7.30. Sat Mats 1.0. FRANK FINLAY In the National Theory of multi-ward winning international Smash Mrt AMADEUS by PETER SHAFFER. Directed by PETER HALL. KING'S NEAD, 225 1915. No Peri Ton's PLAYING THE GAME A Consedy by Jefrey Thomas.

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2317. JAMES BOLAM, SIMON CADELL
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FREING the Story of ALADOIN. Eves
7-30. Thur & Sat Mat 2.50.
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ASCENT OF WILBERFORCE III.

MERMAID TH. Blackfriars. EC4. 01-215 S568. CC. 01-236 5324. WORLD PREMIERE. Prevs from Feb 11. Opens Feb 17. ALEC McCOWAN in The PORTAGE TO SAN CRISTOBAL OF A.H. Adapted for the stage by Christopher Hampton from the novel by George Stelner. Directed by John Dexter. NATIONAL THEATRE 5 928 2252.
OLIVIER (open stage): Ton't. Tomor 7.15
MNLCH ADD ABOUT NOTHING by
Shalkesbears.
LYTTELTON (proscenium stage): Ton't.
7.45 TRANSLATIONS by Brian FrielTomor 7.45 ON THE RAZZLE.
COTTESLOE (small auditorium—loss price
titis): Thur. Fri. Sat 7.30 (Previews)
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Excellent cheap seats day of peri all 3
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Or also at HER MAJESTY'S. OLD VIC. 928 7615-7-8. CC 261 1821. 5 TOAD OF TOAD HALL. Daily 6-45. Mats Wed & Sat 2-30. Running until Jan 30. Good rates for weekday Party Bookings. PALACE, S CC 01-437 5834 or 839
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Credit card bookings 930 0846. PAUL
CANIELS in ITS MAGIC. Mon-Thurs
EVES 7.30. Fri and Set 5.30 and 8.00.
Group sales 379 5061. MUST END FE
6. UNDERNEATH THE ARCHES. A
RUSSICAL Of the Flanagun & Allen story.
Opens March 4. Previews Feb 26. QUEEN'S, 5 CC 01-734 1166. Evenings 8.0. Met Wed 3.0. Sat 5.15 and 8.30. EDWARD FOX. ROSIN RAILEY, JAMES GROUT and PRUNELLA SCALES In QUARTERMAINE'S TERMS. A mey play by SIMON GREY, Directed by HAROLD PINTER. Lest 5 Weeks. Ends Feb 20.

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Agatha Christie's THE MOUSETRAP.
World's longest ever run. 30th Year.
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JOSEPH & THE AMAZING TECHNICOLOR DREAMCOAT. Mon to Sat 2.30
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Spring Opera & Dance Subscription
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AMPLE FREE PARKING after 5.30 pm. STRAND THEATRE CC 01-836 2660, 01-836 4143. Reduced Price prove Feb 1 & 2. OPENS Feb 3 at 7.00. NYREE DAWN PORTER, ROY DOTRICE IN MURDER IN MIND. A Thiller by Terence Feely. Eyes Mon-Fri 8.0. Sats 5.0 & 8.0. Mals Thurs 3.0. TALK OF THE TOWN. CC 01-734 5051. Fer reservations—or on entry—London's greatest night out. From 8 pm. 5 HOURS OF TOP ENTERTAINMENT. THE TALK OF THE TOWN GALA GALAXY REVUE (9.30 pm). ANITA HARRIS (11 pm). Dinner, Dancing, 3 bands. YAUDEVILLE CC 01-836 9988. Eves
8. Weel Mats 2.45. Sats 5 & 8. GORDON
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CARDS ON THE TABLE SORRY, no
reduced prices from any
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F.T. CROSSWORD PUZZLE No. 4,774 DOWN

1 Agree to strike one of the 1 In what way had upbringing

nobs (3, 2, 3) 5 Forgo father's drink (4, 2)

9 Squeezed woman for a start then phoned abroad (5, 3) 10 Links instructional series

12 Like bird to be pale (5) 13 Action rightly progressing (5, 4)

14 Drone in the bread-line (6) 16 Upper army contractor (7) 19 Dog by fire as well as golf

club (7) 21 American general's method of providing margin of safety (6)

the wings (9) 25 Poles trouble slow mover 18 Pub to exclude 1st century 26 Soldiers ringing for annul- 20 Beast without water (4) ment (6)

27 Hound person from eastern France (8) 28 Set in ring (6) Theatres are continued on Page 6 29 P-p-pair write to church (8) 25 Pointed to flat opposite (5)

produced beastly seat? (6) 2 Try to bring luck with inflammatory material (9) 3 GI not disturbed by hybrid (5)

4 Go down as beginner (7) 6 Close by an extended team (9) 7 Swell sound of suitable

material (5) 8 Unique yet completely common (8) 11 Logistically screening the

Heart of the Matter (4) 15 Anticipate getting front seat (9) 23 Second way to grow old in 17 Point to mother country coming out (9)

> savage (8) 21 Rest - not easily moved keens out of sight (4. 3) 22 Broken leg can deflect (6)

24 Saucy frolic (5)

The solution to last Saturday's prize puzzle will be published

with names of winners next Saturday,

FINANCIAL TIMES

BRACKEN HOUSE, CANNON STREET, LONDON EC4P 4BY Telegrams: Finantimo, London PS4. Telex: 8954871 Telephone: 01-248 8000

Monday January 18 1982

Competition and the banks

THE MONOPOLIES Commis remarked, sion's report on the two rival economic bids for Royal Bank of Scotland is remarkable for its lack of emphasis on competition. It customer of the mergers of the Scotland banking industry one of the play of trends and forotsec most concentrated in the world. Yet this is the context in which any bid from an outsider should be considered.

It may be that, even after such an analysis, the Commis-sion would still have concluded that a change of ownership for Royal Bank and its English subsidary, Williams and Glyn's. would make no difference to competition. But the panel might have given more weight to the possibility, stressed by one of the two dissenters, Mr G. Smethurst, that either hidder would give a competitive boost to Williams and Glyn's. As Mr Smethurst pointed out, "The fact that both bidders have a background in retail banking outside the narrow group of London and Scottish clearing banks is an added

Morale

Instead, the Commission question—the effect on job opportunities in Scotland if one of its largest companies is controlled from outside the country. The report says the impression of a branch the Commission's view which economy and diminish confidence and morals in Cartain to the UK. This was no more than a "presumption" in the Commission's view which might be rebuitable in the control of the control of the Commission of the The disappearance through

takeover of independent decision making centres may have affected the quality of employment in some of Britain's towns and regions—in contrast to Germany and the U.S. where Head Offices of large companies are spread more widely. But if the "branch economy" argument is to be used to block mergers, it must be applied consistently—not only in Scotland but in other parts of the country and not only by the Commission but by the Government in deciding which mergers should be referred to it.

The Scottish factor influenced the Commission in rejecting a eneral the transfer of decision Bank case, Sir Alan Neale, cial structures.

union in which resources are free to move to take advantage of available opportunities. He did not makes no attempt to analyse the believe that banning mergers effect on performance, profit-ability and service to the levels of decision making in customer of the mergers of the Scotland can make enough 1960s, which made the British difference to the otherwise free play of trends and forces to be justified." In his view the role of the Royal Bank in Scotland and its service to the community would not be affected by the proposed change of ownership.

It is true that the Commission is required by the Fair Trading Act to pay regard to the balanced distribution of industry and employment in the UK. But this has usually been taken to refer to factory closures ship. The fact that four of the six panel members chose to put so much weight on this element illustrates once again the vague ness of the criteria laid down in the Act and hence the unpredictability of

The other main theme in the report concerns the Bank of England. The Commission did not share the Bank's anxieties about the difficulty of super-vising a bank controlled from devotes a large part of the Hong Kong, but saw force in the report to the "Read Office" argument that the transfer to an overseas owner of "a significant part of the UK clearing bank system" could create conflict of clearing bank was badly in need of fresh blood, a bid from overseas might be preferable to the status quo; the Commission did not think this was true of Royal

Suspicion

Although a majority of the panel in the end endorsed the Bank of England's view that the bid from Hongkong and Shanghai Banking Corporation should not be allowed, there is nothing in the report to justify the remarkably strong reaction shown by the Bank at what it chose to regard as a challenge to its authority. The suspicion remains that in being too foreign bid for Highland jealous of its powers the Bank Distilleries in 1980, but in risked weakening the system of making from one part of the is its special pride. This rests UK to another has played almost on respect for the Bank's judgno role in mergers policy. As ment, not on its assertions to the other dissenter in the Royal be the sole authority on finan-

Understanding Germany

by strong implication West Germany, have been getting a bad In the 1950s it was relatively Press recently, in the U.S. as straightforward. The prime well as in France. Here, for goals were economic recovery instance, is a columnist of the and international respectability. New York Times commenting the latter being achieved (second hand) on a dinner party given for Herr Schmidt and a and the Common Market. collection of American guests by the German Embassy in Washington a week or so ago: the Chancellor came across as "nervous, petulant, self-deceiving and irresolute — a staunchest supporters of the Atlantic Alliance fear may be the state of his nation.

Tensions

The immediate causes of a certain disenchantment with Herr Schmidt as an ally are the declaration of martial law in Poland and his reluctance to respond with sanctions against Poland or the Soviet Union quite as strong as the U.S., in particular, would like. Yet the tensions between the Federal Republic and the U.S. go back a good many years. Those with long memories will recall that the Germany of Konrad Adenauer used sometimes to be criticised in the U.S. for being almost too faithful to the Alliance and for being incapable of developing an eastern policy

That was the period before detente. More recently, the Germans have been blamed within the Alliance for failing to fulfil the Nato commitment of raising defence expenditure by 3 per cent a year in real terms, for taking too narrow and central European a view of the world and for seeking almost a special relationship with the Soviet

Before the latest tensions become any more serious, it is worth trying to look at matters objectively. For obvious reasons, West Germany entered For obvious the world scene late and with a reputation to live down. A decade ago it was not even a member of the UN. It is not, like Britain or France, a longfluenced by geography as well That should be a cause for as history. It is in the middle dialogue, not irritation.

CHANCELLOR SCHMIDT, and of Europe and the German nation remains divided.

Thought of rapprochment with

the East was excluded by the

cold war. By the 1970s, however, there were new openings. West Germany played its full part in the development of detente and began to assume a more inter-national role. No less important, the Soviet Union recognised realities and dropped its attitude of outright hostility

What has happened since has been the near breakdown of detente in East-West relations for reasons that were none of the Germans' making. The West German problem today is how to play a role in inter-national affairs, compatible with the country's economic strength and with membership of the Alliance, that fosters rather hinders East-West than

It may be that it will prove impossible to find a satisfac-tory answer. Certainly the conmilitary machine has not made it any easier. Yet in the meantime there is a case for listening more closely to what Herr Schmidt and his colleagues have to say about West Germany's particular dilemma of being caught between East and West even though its political and economic sympathies lie over-

Two developments seem to us rather healthy. One is that these matters are now being discussed more openly in the Federal Republic itself. Too often in the past there was a tendency to regard any dissent from conventional wisdom about East-West relations and the role of Germany as tantamount to disloyalty. The other is that Its Herr Schmidt is speaking more standing nation state. Its Herr Schmidt is speaking more policies are very heavily instrongly within the Alliance.

AT&T'S NEW AMBITIONS

Squaring up for a fight

By Guy de Jonquieres

THE MAIN TELECOMMUNICATIONS COMPETITORS

Telegraph may soon start turn-AMERICAN SATELLITE

THE DISTINCTIVE bell-

ing up in all sorts of unex-

pected places. On sophisticated

office automation products, for

example, or on personal com-

puters. And in a few years'

time, perhaps, on the new

generation of computerised in-

formation systems which will

bring services like electronic

By freeing AT and T to com-

pete outside the regulated tele-

phone business, the anti-trust

settlement which the company

reached with the U.S. Justice

Department 10 days ago fore-

shadows a massive upheaval

which will extend well beyond

the traditional frontiers of

telecommunications. The rever-

berations will also be felt in

such industries as computers,

consumer electronics and pub-

lishing, both in the U.S. and

The settlement must still be approved by the federal judge

in charge of the case and may also be modified by Congress.

As it stands it seems highly

favourable to AT and T, which

is required in exchange to shed

within 18 months its extensive

But the gains in the new era

of competition opened up by the settlement seem unlikely

to be all one way. Other com-

panies, including such giants as

IBM and Xerox, have long ex-

pected to have to confront

AT and T directly one day and

have been squaring off for the

battle. Moreover, AT and T has

still to show how effectively it

can mobilise its vast financial

and technological resources in

Much of the immediate im-

pact of the settlement is likely

to be felt by the smaller com-

panies which compete wih AT and T in the long-distance

telephone market. Known as

specialised common carriers,

they include MCI, an indepen-dent company based in Washing-

ton DC, and offshoots of Inter-

national Telephone and Tele-

graph, Southern Pacific and Western Union.

These youthful companies

operate their own microwave

radio transmission networks, which connect with AT and Ts

local circuits. By charging as little as half of AT and T's

tariffs and marketing their services aggressively, they have built up a fast-expanding business. Their combined revenues

have grown in less than a de-cade to \$800m last year, against

AT and Ts long-distance revenues of more than \$20bn.

to benefit from the settlement. Removal of its local telephone

In the short-term, they stand

fast-moving, high-risk markets.

internationally.

terests.

banking to the home.

shaped insignia of Ameri-

Telephone

Provides voice, image and data communications via satellite. Owned jointly by Continental Telephone and Pairchild Industries. Owns 20 per cent of Westar satellite system. Turnover n.a.

COMMUNICATIONS SATELLITE CORP

Holds monopoly of U.S. international satellite comm Sole U.S. representative to Intelsat, of which it owns 23 per cent. 1980

Supplies computer services, telephone systems and data contions. 1980 turnover: \$71m. CONTINENTAL TELEPHONE Major independent telephone company operating in U.S. and Canada.

GENERAL TELEPHONE AND ELECTRONICS

Owns largest independent telephone system in the U.S. Other activities include manufacture of telecommunications equipment and operates data communications network. 1980 turnover: \$10bn.

GRAPHIC SCANNING Fast-expanding company founded in 1971. Operates U.S. data communications network, international telex and radio-paging services. 1980 turnover: \$43.2m.

ITT COMMUNICATIONS Part of ITT. Manufactures wide range of telecommunications e ment. Operates international telex service and U.S. long-distance phone network, "Citytel." 1980 turnover: \$7.2bsl.

MCI COMMUNICATIONS

Offers long-distance telephone service between more than 100 cities. 1980 turnover: \$234.2m.

but commercially pedestrian local telephone company in-

Rapidly-growing Canadian PBX manufacturer founded in 1973. Supplies British Telecom and is building large factory in South Wales. 1980 turnover: C\$111m.

instead of just to those with building a simultaneous interpush-button receivers.

But in the longer term, these advantages may be erased. AT and T has kept its long-distance tariffs high to subsidise local services. separated from its local operations, it will have room to lower its long-distance rates close to the levels charged by its com-

AT and T also intends to carve out a share of another growth business, the market for transmitting and processing computer data. Data transmission is still only a fraction of the total U.S. communica tions market, but it is expected to mushroom over the next few years with the spread of such ervices as electronic mail and electronic banking.

market is currently served by four companies, known as value added carriers. with a combined turnover of about \$500m last year. They are Telenet, a subsidiary of General Telephone and Electronics (GTE), the biggest of the independent U.S. telephone companies. Tymnet, part of the Tymshare computer service house; Graphnet, which belongs Graphic Scanning Uninet, part of United Telecommunications.

monopoly will mean that AT and T plans to introduce and T will no longer bave first this year its Advanced Comchoice of higher quality munications Service (ACS), subscriber lines and will have which has taken more than five AT and T plans to introduce to pay the same "access charge" as its competitors to connect transmitting data, ACS is with them. The smaller carriers will also be free to designed to enable technically expand geographically and to services to once compared in complexity to customers with dial telephones

The service is expected to play a central role in AT and Ts future strategy to penetrate the office automation market. It intended to weaken IBM's hold over computers, by enabling IBM products to be linked directly to other manu-facturers' machines. It should also provide a vehicle for a wider marketing effort in the

AT and T's principal beachhead in the office at present is through the supply of private branch exchanges (PBXs). But though the U.S. market for new PBXs has been growing by 20 per cent annually to reach \$850m last year, AT and Ts share has declined to around half from almost total domination a decade or so ago. The steady erosion of its

monopoly has attracted more than two dozen PBX competi-They include tors. communications companies such as GTE and Rolm of the U.S. and Northern Telecom and Mitel of Canada. Computer companies Honeywell and Datapoint are in the fray, too, and

fighting back soon, when it is switched telephone service allowed to sell as well as lease which will compete directly PBXs. It is also expected to with AT and T's long-distance years and many millions of widen its product range to in- network.
dollars to develop. As well as clude sophisticated new office. The flexibility and versatility terminals which could be con- of nected through PBXs to ACS have attracted other big comincompatible computers to con- and to its long-distance tele- panies to the market as well. verse with each other, a task phone network. Dr Alan Pearce, Fairchild Industries and Conti-

NORTHERN TELECOM

Canada's largest telecommunications manufacturer with successful international record. Also sells computer terminals and systems in U.S. 1980 turnover: \$2.1bn.

Operates international voice and telex services and U.S. satellite com-

ications services. 1980 turnover of these operations: \$253.5m.

Manufactures military computers and telecommunications equipment, notably PBXs. 1980 turnover: \$201m.

SATERLETE RUSINESS SYSTEMS Owned by ISM, Aetna Insurance and Communications Satellite Corpora

tion. Offers advanced satellite communications services to comin the U.S. 1980 burnovers n.a. SOLITHERN PACIFIC COMMUNICATIONS

Operates long-distance voice network and plans satellite system. Part

of Southern Pacific group with interests in railways, freight transport and pipelines. 1980 turnover: \$152m.

Major U.S. computer time-sharing company operating U.S. and international data network. 1980 turnover: \$235.9m.

UNITED TELECOMMUNICATIONS

Second largest U.S. independent telephone company, sells equip data processing services. 1980 turnover: \$1.9bn.

WESTERN UNION

Provides wide range of communications services, including telex, telegraph and satellite systems. Dominant telex operator in U.S., recently allowed to enter international market as well. 1980 tirmover: \$794m.

Research essistance : Rivka Silber

tions consultant, believes that Satellite Corporation, AT and T's Western Electric manufacturing subsidiary wili "make it a formidable competi-

step towards competing directly with AT and T at the most advanced end of the communications market through its back-ing for Satellite Business Systems (SBS). It is also expected to expand its communications interests through acquisitions, following the recent termination of the Justice Department's anti-trust case against it.

SBS, a consortium owned by IBM, Communications Satellite Corporation and Aetna, started operating commercially last year. It is a highly sophisticated -and expensive—service, designed to handle the internal communications of large businesses with offices scattered throughout the U.S.

Using dish aerials on their office roofs, SBS customers can transmit and receive voice mesputer data via satellite. The order to supply public telecomsystem, due to be linked to munications equipment to South British Telecom's network later Korea and it also has a smallthis year, also allows business share in Egypt's men thousands of miles apart modernisation programme. IBM is expected to start this year, also allows business-marketing in the U.S. a PBX men thousands of miles apart which it currently supplies to to hold conferences on closed-

satellite communications

is finked with Western Union's Wester satellite system. Other companies involved in communiations satellites include GTE IBM has itself not been stand- and RCA, the diversified elec-ing still. It has taken a major tronics group.

AT and T's new ambitions also extend beyond the U.S. coastline. Last year it set up an international division to offer consultancy services and to market Western Electric equipment overseas. It recently agreed to buy 45 per cent of Telectron. Ireland's biggest telecommunications manufacturer, and this week it will establish its corporate identity in Britain by being listed on the London Stock Exchange. Its emergence on the inter-

national scene, from which it has been absent for most of the past 50 years, spells stiffer competi-tion for ITT and for foreign companies such as Sweden's I. M. Ericsson, West Germany's Siemens, the Dutch Philips group and Nippon Electric and Fujitsu of Japan. A couple of sages and large volumes of com- years ago AT and T won a major \$2bn

> anti-trust case was influenced by technology. "Western Electric will be

one network. Dr Alan Pearce. Fairchild Industries and Conti- the past," says Mr Brad Peery, dominate new markets Washington telecommunica- nental Telephone own American an AT and T analyst with U.S. has dominated old ones."

brokers Paine Webber. Like other industry observers, he helieves that the company hav decide to expand into such fields: as personal computers — a market-which IBM entered last year -and equipment for satellite broadcasting and television equipment.

AT and T has been eyeing with some interest the existing American market for cabl television and the potential for new electronic home information systems like viewdata. It has already carried out field trials of a system which stores Yellow Pages information on a central computer and transmits them on demand to residential

But it would be bound to face strong opposition if it tried to move in as a commercial operator in these markets. The cable television industry and newspaper publishers see AT and T as a major threat and there is considerable sapport in Congress for proposals legislation which would limit the company's room for

Probably the biggest uncer tainty about AT and T's future, though is how successfully it can adjust to competing in increasingly diverse high-technology markets-where entre preneurial agility often counts for as much as sheer size—atte almost a century of rilling a monolithic, though highly efficient, monopoly.

The company certainly has the necessary technological financial and manufacturing resources. But does it possess the management skills and marketing flair required to search out promising new commercial opportunities and respond quickly to them?

The company has sometimes been slow to turn to commercial advantage the innovative achievements of its research and development arm; Bell Labs. Canada's fast-growing Mitel for example, has bee highly successful selling PBXs which use advanced microchip technology pioneered at Bell Labs. And when AT and T needed new local exchanges few years ago, it turned to another Canadian company, Northern Telecom, to supply

Seme industry experts also believe that AT and T may find the going tougher than expected tions services, such as ACS. Paine Webber's Mr Sandy Gar-rett points out that Xerox withdrew plans to launch a similar service, X.Ten, after concluding that it would take too long to recover the huge initial investment required

of these doubts, it certainly is which it currently supplies to hold conferences on closed. It is widely believed in not admitting to them publicly customers in Europe.

AT and T is likely to start later this year to launch a Department's decision to end its competitors can afford to discompetitors can afford to dismiss lightly the challenge which the Reagan Administration's it is likely to pose them in desire to strengthen American future. Says Dr Pearce: Why industry against the growing should AT and T agree to dump Japanese challenge in electronic its secure local monopolies to enter untested markets? The answer must be that it is absomuch more aggressive than in lutely certain that it can the past," says Mr Brad Peery, dominate new markets as it

Men & Matters

Outpost

Many a public platform is going to be the duller for the departure of the flamboyantly

that 200,000 people don't depend on you making the rightdecision," he says. He has been keeping his familiar profile a little lower

> Jackson does not intend to become a "trade union odd-job man" like some of his colleagues on he TUC who just cannot give it all up.
>
> He will remain a government representative on the BP board

whelmingly with the West.

moustachioed Tom Jackson who retires in June after 15 years as general secretary of the Union of Communication Workers, the postmen's union. But chatting to him after the election of his successor, Alan Tuffin, I could detect no regret in Jackson's going. "It will be wonderful to wake up and know

these past few years, declining many of the media and public engagements that made him perhaps the most instantly-recognisable of our union

until his contract expires in 18



takeover bid, sir?"

months "when I don't expect they'll want me any more." The Labour Party will continue to enjoy his allegiance - but that, he says firmly, will be it. At the age of 56, Jackson intends to combine business

with pleasure by opening an antiquarian bookshop in York. He has a long-held passion for old books, especially children's books. It is no coincidence that UCW conferences have usually been held in bibliophile resorts where Jackson could wander through the second-hand bookshops between debates.

And what of the future of been devoted since he joined the Post Office as a messenger boy in 1939? "The greatest challenge will be new technology."
he says. "The letter post will
reduce dramatically, though you'll still need, postmen to carry packets and our telephonist members will still be wanted. But sooner or later, we'll need to merge." With Jackson gone, in the meantime, how shall we know who to blame if the post is late?

Cover charge

Postal changes of quite a dif-ferent stamp are being mooted in the Channel Islands where the smaller isles in the bailiwick are making a determined bid for a share of Guernsey's film a year philatelic profits.

When Guernsey took over postal services from an indulgent GPO in 1969, it banned independent and lucrative issues by such neighbours as the 500-acre island of Herm or the even-smaller isle of Lihou whose soldierly owner Patrick Wootton almost declared UDI. By threatening to go it alone, Alderney has just forced Gaernsey into a compromise

over the profits. Now Sark wants own stamps, too. The island's hereditary ruler Michael Beaumont is to of

agreement to issue Alderney

meniorative stamps and hand

regional" definitive and com-

in his feudal parliament, Chief

Pleas, this week.
Should there be any delay in issuing Sark stamps, he says, Guernsey will face a claim for payment for using Sark scenes to illustrate its own stamps.

Left bank

More senior executives, I suspect, will follow Patrick Moorsom in a drift from the London offices of the French banks as the ripples of Mitterrand's nationalisation spread across the Channel.

Moorsom is leaving the Banque de Paris et des Pays-Bas, where he has been a sousdirecteur, to join Cayzer, Garimore next month as managing director of its corporate finance arm, Cayzer Ltd. "Unsettling uncertainty about the future was an important element in the decision to

compared unfavourably with the prospects at Cayzer where former N.M.F. Rothschild beginning to build up its corporate finance activities. Until now these have lagged well behind CG's interests in investment management, hand-

move," Moorsom tells me.

management buy-out services which featured most prominently in the recent deal for But with £10m available from last month's rights issue. Secker 1795. His son, the first Baron, Walker tells me that more resources will be put into the burg in the early 1880s and

Moorsom's appointment is the first of several being made to reinforce the Cayzer team in

sized businesses.

the British and Commonwealth rom: Shipping group of which Cayzer is part. The son of a Welsh shipowner. Moorsom was a director Shipbrokers

move a proposal to that effect Wrightson and was later involved in ship financing for Amex Bank and Barclay's Merchant Bank as well as the Banque de Paris.

Arms and the man

Financial journalism is becoming as dangerous as sports

reporting.
Colleagues covering the ACC shareholders' meetings last week were held at bay by a security lady whose attractive blonde appearance belied her determination to prevent the from crossing the threshold.

While male reporters peered through a partition at the pro-ceedings, however, a woman from one newspaper entered into an ill-advised scuffle with the guard, retiring with what, she thought, might be a broken Little wonder then that the

newspapers seem to have been unable to tell their accents from the apostrophes in writing about the new Australian chairman Robert Holmes à Court. vice-president David Secker A quick glance through the Walker, who now runs CG, is has revealed at least six other versions of the elegant entre prencur's surname — all wrong He is not Holmes a Court, a Court, a' Court, a 'Court, A Court or even A'Court.

As a second cousin to the sixth Baron Heytesbury, the ling funds of £1bn, and the ACC bidder traces his ancestry moneybrokers Exco Inter- back to William Pierce Ashe à Court, an army colonel and MP

who was created a baronet in

was ambassador to St Petersfinancing of small to medium- later Viceroy of Ireland. Mental note

His own background should Written on a poster in a Birmake him feel at home inside mingham psychiatrist's waitingstress before leaving.

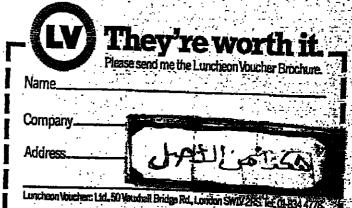
Observer

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FINANCIAL TIMES SURVEY

Monday January 18, 1982

COMEUTERS

The battle for new computer-related markets is being waged at national as well as company level. Most industrialised nations now view computer and electronic technology as a priority and provide support schemes.

New product areas erode frontiers

BY GUY DE JONQUIERES

1980s must surely be the decade of the express train. It is hardly stretching the analogy to add that it also promises to be the era of the motor car, the jet aircraft—and, penhaps, even of the space shuttle.

For computing has now reached a point, in terms of its availability, cost and versatility, at which its social and economic consequences can be compared to that of mechanised transport. Both have altered human perceptions of the world by radically transforming previous concepts of time and space.

The computer today can perform, in seconds, those opera-tions which would have once required thousands of man hours to carry out, or which it would have been physically impossible to do at all. It can compress into a soace, occupying only a medium-sized room, volumes of information which and of computing. One is that would fill several libraries if while transport has developed committed to paper. And it steadily over the past 150 years, can retrieve; order, and cross most of the notable achieve-

rthit.

IF COMPUTERS are the reference them at speeds that ments in computing and their "steam power" of the new would defeat a regiment of practical application have taken industrial revolution, then the librarians.

Just as the oil, coal and steel industries grew up around the railways during the 19th cen-tury, so many of today's industries have come to depend on computers for their lifeblood. Without computing power the world's banking systems would grind to a halt, markets would cease trading, commercial aircraft would be grounded and much manufacturing plant would no longer be able to func-

vices would be paralysed, hospitals would be deprived of many diagnostic and treatment facilities and traffic light systems would cease to operate. Most types of modern military equipment would also be im-

There are, however, two significant differences between the history of mechanical transport

place during the past 40 years.

Second, while mechanised transport has increased human mobility, computing by vastly expanding man's access to information-has also enlarged the range of activities which he can perform without needing to move from one spot. For example, the engineer can use his computer to calculate critical specifications by simulating conditions whose effects could otherwise be determined only by a lengthy process of trial and error in the field.

Choice narrowed

But in other respects the of development of mechanised transport and computing are remarkably similar. The state of data-processing in the 1950s and 1960s can be compared closely to railway

Just as rail passengers are restricted by the geographical



processing power and cumbersome operating procedures of most computers at that time narrowed the choice of the

Most data then could only be batch-processed: information was transported physically to information the computer, processed, and the results shipped back again to where they were needed. Each user's requirements had to be fitted into a rigid timetable tailored to try to meet everyone else's needs. There was no boarding or alighting from the data-processing train between stations. Then came distributed data-

processing and the spread of the minicomputer. The advantages of this development may be compared to those of the bus, able to adjust both its timetable and its route map to suit varying conditions, but still bound to meet the needs of all its passengers at once and under the control of a single

The arrival of the personal layout of the rail network and computer ushers in the same the timetable of the trains personal freedom as did the

offers the individual greatlyexpanded choice and control. bringing to his desktop processing power and data storage capacity which a few years ago would have been available only on a large central computer. Moreover, it is available for use

on demand. The era of the jet aircraft is just starting to dawn. It is the result of the merger of computer and communications technology into a single entity, whose essential characteristic is the digital signal or "bit," expressed either as a zero or as a

The digitisation of telecommunications enable networks to be turned into vast, high-speed data "highways" along which vast quantities of computerised device to another. And because any type of information can be expressed in digital form, modern networks carry not just computer data but voice communications, images and television

gence is the underpinning of the emergence of a new "information society," whose electronic only a decade or so ago by arteries will link homes, offices and factories in a huge computerised network. By communicating information stantaneously to the point innovative ideas with tech-where it is needed, the network nological expertise and will remove the need for many types of travel—to the shops, to the bank, to the library, perhaps even to the office. The longer-

term consequences for society as a whole can still only be Strategy change

How quickly the "informa-tion society" will be attained, and the precise form it will take, are also uncertain. Predicting the speed at which technological advances will be translated into products and systems is notoriously difficult. But the increasing pervasivecomputer already being reflected changes in the structure of

CONTINUED ON PAGE III

One result has been that the

industry's ranks, dominated

relatively few small companies

have been swollen by the arrival

of smaller newcomers which

have successfully combined

markets have been pioneered by

the entrepreneurs rather than established companies. Thus,

Apple and Commodore led the

way in personal computers,

Wang in display word pro-

essors and Digital Equipment

At the same time, the older-

established companies have had to expand into new product areas and adapt their develop-

ment and marketing strategies

in order to remain competitive.

Thus, the past year has seen IBM enter the personal com-

puter market and ICL diversify

from its base in mainframe com-

puters into office equipment,

nological expertise entrepreneurial initiative

carve out market shares.

in minicomputers.

nological

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ASTERIE OUGE STIME HAD OUR OWN ENAMES.

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COMPUTERS

THE FASTEST GROWING PCM SUPPLIER IN THE UK.

John Fujii charts the winners among Japanese companies

Japan steps up the race against IBM

Japan's first domestically developed computer was introduced on the market in 1954, Japan has come to the forefront of the world's computer industry.

The first big development in the process was in 1971 when the Ministry of International .Trade' and Industry provided approximately \$300m in Government funds between 1972 and 1976 to meet the challenge of the IBM 370 Series.

At that time, Fujitsu, Hitachi and Mitsubishi Electric were instructed to pursue the development of an IBM compatible system while Toshiba Corporation and Nippon Electric Comnany were told to develop noncompatible architecture.

Later, Mitsubishi and Oki Electric Industry dropped out of this programme to go into small and medium computers.

Today, Fujitsu and Hitachi have the world's most powerful large-frame computers, the M-Series, to compete with IBM's latest 3081 which offers 14 MIPS (millions instructions.

Hitachi's HITAC M-280H has 17 MIPS while Fujitsu's FACOM M-380 has 15 MIPS and the M-382 offers 30 MIPS. The ACOS 1000 developed by Nippon Electric has 29 MIPS.

In these few short years. Japanese large-scale computer manufacturers have held down IBM Japan's growth in the world's second largest market while cutting into IBM penetration in the developing countries.

There are six big general purpose computer manufac-Fujitsu, Nippon Electric (NEC), Toshiba, Mitsubishi and Oki which dropped out of the of their tie-up with Nippon

although they are primarily in of Y1,074.9bn or \$4.7bn. the smaller machines.

Fujitsu, Japan's top computer manufacturer, bettered IBM Japan during 1980 for the second year in a row in elecsecond year in a row in electronic data processing (EDP) revenues. Fujitsu reported revenues for the fiscal year ending March 31 1981 of Y581.6bn or \$2.75n of which \$1.8bn came from its information processing division. This was up 17 per cent over the previous year.

At the same time, IBM registered calendar 1930 revenues of \$1.6bn, 4.3 per cent over 1979. However, in net over 1979. However, in net income, IBM Japan came out

FUJITSU

The top computer manufacturer bettered IBM Japau' last year for the second successive year in

on top with \$174m or 10.7 per cent of sales compared with Fujitsu's \$86m or 3.2 per cent of total sales. ·Fujitsu

\$389m or 14 per cent of sales, vious year. IBM Japan reported 1980 exports of about \$327m, a 20 per cent increase. Hitachi reported sales of

Y260.7bn or \$1.185bn in computers and peripherals, up 16 per cent, in fiscal 1980. Electronic processing equipment accounted for 25 per cent of the \$9.8bn in total sales. Hitachi's The big American computer global exports totalled \$2.5bn. Nippon Electric reported

POWER

IN LESS than 30 years since Japan, Nippon Univac Kaisha, sales in the information pro-Burroughs, NCR (Japan) and cessing division, mostly comseveral European companies puters and peripherals, of such as Nixdorf of West Ger- Y249.28bn or \$1.145bn, up 20 many and Olivetti of Italy: per cent out of total revenues

Of NEC's global exports. computers and peripherals accounted for 5 per cent, communications equipment and devices 40 per cent, electric devices 20 per cent and home electronic products 27 per cent. NEC said that a third of its \$2.961bn sales in Japan came from Government and official institutions. Exports were up

30 per cent to \$1.291bn. Fujitsu and Hitachi have approximately 60 per cent of Government agency

Fujitsu cites its wide range of computer usage by such institutions as the Federation Bankers Association of Japan, the Ministry of Labour, Daikyo Oil, Kyoto University, Kawasaki Steel and the National Space Development Agency of Japan.

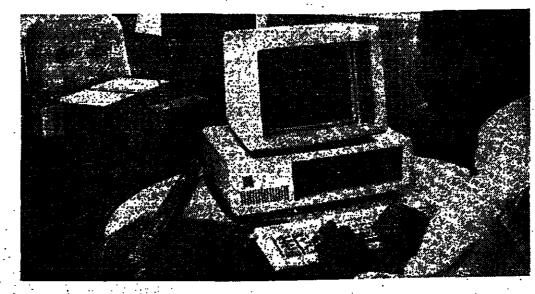
Despite the inroads made by the Japanese computer companies, IBM Japan still holds on to a 28 per cent share of the Japanese market, mainly in large-scale systems.

large-scale (over Y500m in value), IBM Japan was first with 40 per cent of the market, according to the figures provided by Computopia of June 1981.

Others in large-scale market share were Hitachi 17.3 per cent, Fujitsu 16.1 per cent, Univac 11.7 per cent, NEC 10.5 per cent. Burroughs 2.2 per NCR 0.4 per cent, Mitsubishi 0.3 per cent and others 1.6 per cent.

The purpose of the Mitsubishi programme, as reported, was to provide a wide range of goal of having the computer costs well computers so the Mitsubishi available by fiscal 1990. of computers group companies could "Buy The schedule calls for reand all l Mitsubishi." It was reported search to begin in 1982, hard-included.

TODAY POTENTIAL



that the Mitsubishi affiliated companies promised to turn in their IBMs for Mitsubishis if they were as good. Mr Kato said that in this day of business. companies buy the best equipment regardless of group affiliation.

The Japanese are not satisfied with just keeping up with IBM. They are now looking ahead in the computer business with a "fifth generation" computer,

Despite inroads domestic companies, it still holds a 28 per cent share of Japanese market

just as they have developed a 256K RAM (random access memory) chip already.

The Japanese Government and the private sector, including the six domestic computer manufacturers, the Electronic Technology Research Center (ETCRC) and university research institutes will join in pooling their knowdevelopment programmes leading loward a "fifth generation" computer.

The Ministry of International Trade and Industry (Miti) intends to invest approximately Y100bn (\$454m) into the project over the next 10 years with the

FOR

TOMORROW.

ware to be designed by fiscal 1985, software in 1987 and work beginning thereafter on an experimental model so that a prototype will ready in fiscal 1990.

There have been from some of the European countries such as the United Kingdom, France and West Germany. Some U.S. Government agencies have also shown

The new "fifth generation' computer will have all new hardware and software architecture and a new way of communicating with human beings. The Japanese future machine will be able to hear and talk and have knowledge to solve

The machine probably will have "Josephson's Junction" that operate absolute zero temperatures and would be much more rapid than the fastest semiconductors now available, according to the

Finally, Japan's computer 15.2 per cent rate annually over the next five years.

The Council for Promotion of Information Processing reports its company image overseas by computer throughout Japan should double business machines first, and to Y8.300bn or \$37.2bn in the moving eventually to the larger next five years in terms of installation costs.

This group, which advises the Ministry of International Trade and Industry, said there were an estimated Y4.091.3bn or Fujitsu said that the OEM \$18.59bn worth of computers in system is self-defeating in that use in fiscal 1980. Installation costs were calculated in terms of computers for general use and all leased computers were

MARKET SHARE IN JAPAN Percentage values 28.7 Fujitsu Hitachi NEC-Toshiba (joint sales firm) Oki-Univac Burroughs NCR Mitsphishi Source: Combutth

Japanese component manufacturers are supplying parts for IBM's personal computer, shown left. The computer, which is assembled in Florida, can generate and display charts, graphs, text and numerical information

Strategies may differ among Japanese groups but the target remains the same

Search widens for export markets

JAPAN'S COMPUTER industry does not seem to have a unified strategy for exports. Instead each company professes to have its own policy dictated by its needs. It is certain that all the companies are emphasising exports to the developing or neighbouring countries first.

Fujitsu and Hitachi, two of Finally. Japan's computer Japan's largest are concentrat-usage is expected to grow at a ing on OEM (original equipment manufacture) or private label trade while Nippon Electric (NEC) believes in building up utilisation exporting peripherals and small

> Mr Akiyoshi Kato, the vicepresident and general manager EDP (electronic data process ing) overseas operations o Fujitsu said that the OEM it does not build up the company image over the long run.

models.

At Fujitsu, Mr Naruto Michio. general manager for international operations, seems to think his company policy is the best He cited growth in exports this year of 20-25 per cent to Y58bn (\$263.6m). Mr Mitsuhiro Saitoh, manager

for Hitachi's computer planning department, also believes OEM is the way to go for overseas growth. Mr Naruto projected exports of around 30 per cent for Fujitsu's eventual target. This is in view of the fact that the fastest growing sectors are the developing countries such as Australia, South Korea, Taiwan, the Philippines, Brazil and

Fujitsu has invested Y8.8bn a or \$40m over the past 10 years at Woburn, Mass. where keybuilding up their markets in these areas these areas.

Fujitsu expects to have a 40 per cent annual growth to reach that Y58bn target. Hitachi hopes to increase exports by 60 per cent to Y26.5bn or \$120m while NEC plans for a 50 per cent growth to Y10.8bn or \$90m. Fujitsu sold \$70m worth to the U.S. mainly through Amdahl in which they have a 32 per cent

nterest. Fujitsu also exported \$30m worth of products to Europe, primarily to Siemens. The new deal with ICL is expected to spur future exports The remaining \$70m worth were shipped to 10 other countries including Spain. Brazil,

Taiwan, Singapore and South

In addition to the Amdahl agreement, Fujitsu has formed TRW-Fujitsu Co. in a joint venture with TRW Inc. in the U.S. The new company handles sales of small and medium scale computer systems as well as terminals for retail and banking applications.

In the latest agreement with ICL of the UK, Fujitsu will supply mainframes as well as Hitachi concentrates on CEM provide early access to Fujitsu's sales of large mainframes advanced LSI chip and com- through National Advanced puter aided design technology. Fujitsu also has a licensing with Sociedad Espanola de Communicaciones e Informatia SA (SECOINSA) under which the Spanish company manufactures and markets its own small-scale computers, peripherals and terminals. NEC has sold 10 medium sized computers to China. They are restricted from selling large

ordination Committee for Export to Communist Areas). By far the biggest potential for NEC is in the neighbouring countries of South Korea and Taiwan. A joint venture has been formed in Taiwan, Central Computer Center Corp. Six medium-sized computers have been ordered.

sized computers have been sold through NEC's arrangements with the Samsung group. In Hong Kong, Argentina and Brazil, NEC has been sell-ing their computers with success, In Brazil especially, peripherals and printers have to be local products. Assembly on

a knockdown basis is in pro-

with NEC Telecommunications Europe in London to handle sales all through Europe. Peripherals and other equipment will be incorporated into their

Nippon Electric has a special

tunately, IBM is not in coun-Saudi Arabia.

NEC has a four-stage programme. First, sales to developed countries, second to Asian countries, third to the Middle East and finally to the Communist countries like China and the Soviet Union. good thing about the oil countries is that they have money and all of their imports are outright purchases. However, there is some country risk.

HITACHI

Now selling 10 per cent of its EDP products in foreign markets. In five years' time exports, may reach 20 per cent

In the U.S., peripherals, spinwriters and SBCs (small business computers) are sold through the NEC Information Systems. An average of 2,500 spinwriter units are sold monthly while 50 SBCs are sold factures plug monthly. NEC American Incorporated, mainly a communications com-

pany based in Melville, Mass., handles ACOS mainframes. NEC has already built

small manufacturing facility future manufacturing, if and when the day comes. Information Systems did \$100m of business in fiscal 1981 and expects to reach \$500m in five years' time. Mr Kato feels that direct sales is the way to go. He believes that OEM sales are more costly in the long run. All market growth means nothing because there is no company image.

Every country is different. Pricing has to be flexible, according to the NEC general manager for overseas operations. One of the main diffi-culties with IBM is that their pricing is the same worldwide. In Japan, IBM is changing its structure and becoming more Japanese in its approach to the domestic market. They have to keep their market share.

Mr Kato feels that the Japanese have caught up on horizontal package software but still have some way to go in vertical industrial software.
The Japanese need more experience in this field like IBM.

through National Advanced Systems in the U.S., Olivetti in Italy and BASF in West Germany—which amount to 70 per cent of total EDP exports, NAS took three out of every

where they have set up an made. Hitachi only exports ACOS support centre in CPUs (central processin Baghdad where 20 technicians units); desk drives and tapes t are stationed to help service its oem partners while the their oil country clients. For- partners take care of software ries like Iraq, Egypt and sells 10 per cent of its EDP products in foreign markets In five years' time, exports are cent. Small computers also account for 15 per cents of exports.

> Toshiba also exports small business computers and peripherals. Half of its 1981 export sales of \$34m will be in work stations, disc drives and other peripherals. Projected sales for VSBC in fiscal 1981 are 3,000 units:

> Fuitsu has also sold 16 nedium computers to China China is a potential market but is restricted under COCOM regulations.

Hitachi's proposed sale of a M-180 through the China Trade Council has been held up by the U.S. under COCOM regulations. It has been ordered for use in a Beijing university research laboratory. Mr Naruto decried reports

that Japan was out to get IBM. 'IBM is our teacher. -Without her we cannot survive. Obviously: he had reference to the fact that Fujitsu manuhas 60 per cent of the world market compared to just 3 or 4 per cent for Japanese companies combined:

Mr Naruto also insisted that Japanese software is not weak He said that the Japanese are good at figures and as a result excel in application software.

The Japanese merely have

a different approach to software. We are not lacking in software," he insisted. The Japanese have set up a

Software Industry Promotion Society with 127 regular and 30 associate members to promote the development of software.

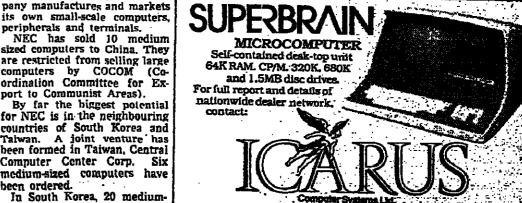
NEC exports about 10 per cent of its data processing equipment amounting to about Y22 to 23bn in the fiscal year ending in March, 1982. The figures are on a FOB basis. These figures include SBCs

These figures include SBCs but not personal computers.

NEC aims for 50 per cent growth in experts so that infive years' time they expect to reach the Y100bn figure.

Although they are not yet selling their ACOS series oversear NEC is doing very well in small business computers. They have set up NEC Information Systems Australia to handle sales in that country. In Singapore, three years ago, they set up NEC Computers Singapore Pte to handle sales to Thailand, Malaysia, Singapore and Indonesia. In Mexico, NEC Information Systems

NEC Information Systems based in Lexington, Mass., handles two dealers through their Dallas office. Already they have sold 50 SBCs. Mr Naruto admitted that Mexico is IBM territory and difficult to

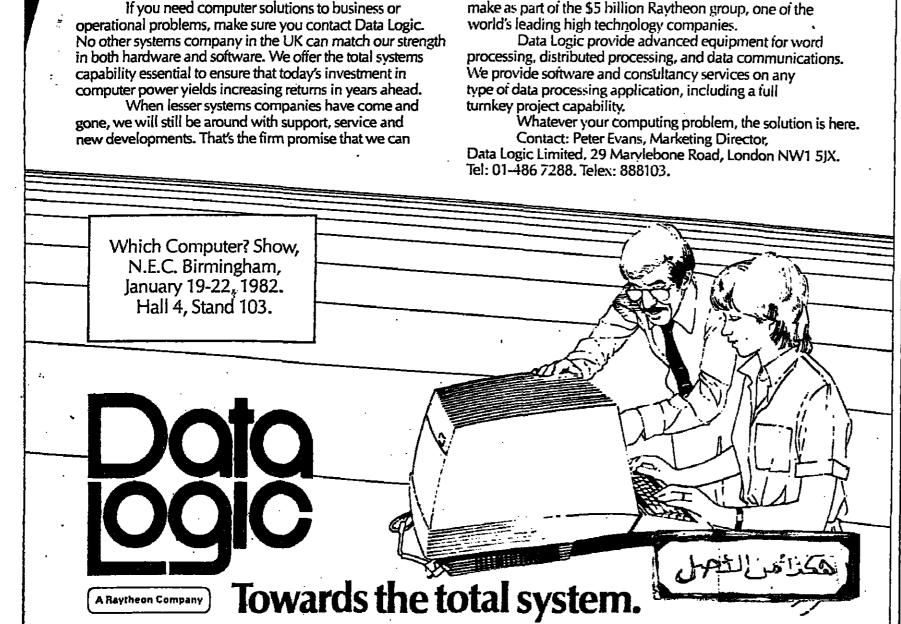


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Alan Cane examines areas where Japan is out to dispel the myth that it is a nation of refiners, rather than creators

Testing time for Japanese innovations

prove that in information technology they are at solve are at fastest general-purpose main-originality as they are at maintry.

They already build some of the enormously fast special the best large commercial computers; Siemens, ICL, Olivetti, BASF are smong the major European roupeales which have commercial agreements with Japanese mainframe manufacturers. Nasch, the mainframe of the URL 2021 widely mainframe of the URL 2021 widely mainframe manufacturers. turers. Nasco, the mainframe computer aim of National Semi-conductor, one of the major semiconductor manufacturers in the U.S., markets Hitachi main-frames in Europe and the U.S.

Their reputation is growing rapidly in the small computer field. National Panasonic, Sord. Nippon Electric and Matsushita all make well regarded micro-

Companies such as National Panasonie bave eased their machines into the European small systems market by agreements with suppliers able to equipped to run MicroCobol, a microcomputer version of the world's most used business

It is well recognised that the Japanese have been much slower to develop fine, reliable software than first rate hardware, but this is changing. Only a few weeks ago Mr David Fairbairn. director of the UK National collaborate in the generation of Computing Centre warned that new technologies, while develop-Western complexency over its ing their computers quite software lead was misplaced.

The spur behind much of Japan's industrial effort, its Ministry of International Trade haugs on, however. Mr Terry and Industry (MITI) is reported Pasola, managing director of to have agreed to provide Amdahi (UK), points out: We Japanese computer manufac do not think of them as turers with \$150m over the next three years to create new

operating systems software. These are the instructions which run the computer itself, as opposed to the applications software which carries out specific tasks such as accountancy or payroll.

Efficiency test

The efficiency of the operating software to a very large extent determines the efficiency of the computer itself. Of Japan's three principal mainframe computer manufacturers, Fujitsu Hitachi and Nippon computed business believed that Electric, Fujitsu and Hitachi are computers would burn up if Electric, Fujitsu and Hitachi they were not water cooled. now make machines which are

will run IBM operating software. then very large scale integrated With the aid of the MITI in circuits in his computers. vestment, Japanese companies perform significantly better than IBMs.

Fujitsu built the first Japanese computer back in 1954. Now NEC, Oki, Toshiba and Mitsu-bishi together with IBM (Japan) and Univac (Japan) selling significantly in the Japanese business computer market.

Fujitsu has the largest num-controller boards using those ber of installed computers in chips.

Japan and according to Mr Y. "Then we have developed a bus Kawatani, its general manager, which enables individual chips

vide 2.7 times the performance of the IBM 3081, widely regarded as the first of IBM's new generation of big computers. It is said to have four times the memory capacity (essential for speedy working) and three times the speed.

How has this been accomplished? The M-382 is not access memories, Japanese conceptually a new kind of systems houses are using home computer, but it has taken congressions for their products.

And Japan can point to a ventional technology to the limits imposed by present fabri-

Fujitsu has not done this alone. The initial force behind the IBM plug compatible market provide proprietary software to run on the machines. National panasonic, for example, first sold in the UK its machines. Amdahl believed he could improve the performance of IBM-type machines using new

technology and needed money io prove it. Fujitsu provided that money in exchange for a stake in the company and a share in Amdahl's technological know-

Now Fujitsu and Amdahl

separately. The old story of the Japanese as refiners rather than creators

innovators, rather as the most effective electronics manufacturer there is." Their joint efforts have produced higher speeds and higher density logic and memory chips.
Mr Kawatani points out: "The
M-382 is air-cooled rather than
water-cooled; it uses 64K RAMS rather than 16K and emitter-

gates per chip compared with transitor-transitor logic devices with 704 gates per chip." It was, in fact, Gene Amdahl who believed that air could be used to cool dense logic and memory chips when most of the computed business believed that

coupled logic devices with 1300

It was also Gene Amdahl who IBM plug compatible: was one of the first to use large-They are IBM look-aikes and scale integrated circuits and

Mr Pasola points to three ware that is significantly better can stay ahead of Fujitsu than IBM's for computers that despite the fact that both com-perform significantly better panies are starting with the same building blocks.

computer instructions written there are some six Japanese into memory chips. With companies, Fujitsu, Hitachi, Fujitsu we developed a seven NEC, Oki, Toshiba and Mitsu-nanosecond switching time bishi together with IBM (Japan) random access memory chip." "In the 580, we have been able to put microcode on each of the central processor unit

THE JAPANESE are out to sales administration, it also to talk to each other with a "In the age of distributed prove that in information tech- produces the world's largest and memory bus controller acting as data processing, and complex

machines such as the products which can give the impression trol Data do not enjoy."

of Cray Laboratories, busit that the 580 is a series of So: access to U.S. kn specifically to solve scientisic different computers all operating different computers all operating simultaneously under Hitachi), brilliantly

An advantage

in semiconductor manufacture. While most of the U.S. manufacturers are having problems with the production of 64K random access memories, Japanese And Japan can point to a growing string of innovation in semiconductors—the high electron mobility transistor (HEMT) for example, pioneered

and developed at Fujitsu, and the static induction transistor, invented by Jun-ichi Nishizawa of Tohuku University in 1950. And according to Mr Kawatani: "All six of Japan's computer makers are involved in communications,"

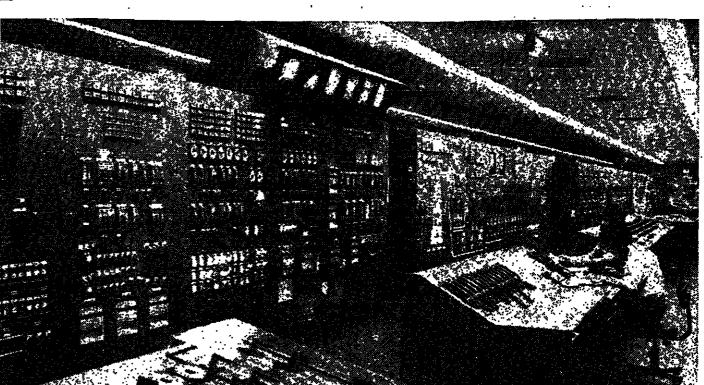
"Fujitsu, for example, started out in 1935 making telephone instruments and was until quite recently primarily a communications company.

computer networks, this is a decided advantage which most of the foreign competitors, including IBM, Univac and Con-

So: access to U.S. know-how (Nasco works closely with Hitachi), brilliantly refined manufacturing technology and communications skills; all this explains Japan's present posi-tion in the computer market. It fits well with the theory that But Japan's great strength is the Japanese fight shy of leap-a semiconductor manufacture. frogging current technology for fear of commercial failure.

But now MITI is putting some \$400m over 10 years into a project to create the next generation of computers, machines that process more than one stream of data simultaneously, that can store, assimilate and reshuffle data in an intelligent manner and which could come closer to the idea of an "elec-tronic brain" than anything

It would give Japan undisputed world leadership in information technology if it proves successful. It is an indication of the confidence of the Japanese computer industry that it has said publicly it is going for such a goal. And it be the test which will finally prove if the Japanese are innovators or copyists.



An example of how Japan uses computer power to maximise industrial efficiency at a steel-making plant: computers at the Ohgishima works of NKK (Nippon Kokan) calculate energy use and recovery and are connected to the NKK Tokyo head office so that rapid instructions can be relayed from

22 miles away. Only 750 people are required on any shift at Ohgishima, and many of the workers are in control rooms filled with flickering computer screens, rather than the sound of metal and machinery. One man in a tower, for instance, operates computers controlling a hot strip mill that produce the world's widest steel coils.

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New product areas erode frontiers

CONTINUED FROM PAGE I

small business systems and tele- and industry has enabled Japan

communications. Very often traditional demarcation lines between different and, in some respects, to overmarkets have been eroded. In the U.S. IBM, through its interest in Satellite Business Systems, is challenging the traditional territory of American ditional territory of American Telephone and Telegraph, which in turn is poised to enter the office automation field. Both will compete there against Xerox which withdrew from mainframe computers a decade ago but has re-emerged as a supplier of advanced integrated

office systems. The battle for these new markets is being waged not only at the level of companies, but nationally as well. Most industrialised countries now view computer and electronic technology as a priority resource and encourage its development through support schemes ranging from subsidies through preferential Government procure-

ment to protectionism. attracted keener attention, both ing it. As the near-collapse of for the boldness of its object ICL demonstrated earlier this tives and its success in fulfilling year, the penalties for those them, than that of Japan. In less who misjudge the market can than a decade, a carefully-co-ordinated programme of colinated programme of collaboration between Government but it is also unforgiving.

to catch up with the world leaders in computer technology take them.

Japan's self-confidence can be measured by the ambitious scope of its widely-publicised project to develop a "fifth generation" of computers, well in advance of any currently contemplated in the U.S. highly advanced technology new architecture and immensely sophisticated software, the machines would emulate aspects of human behaviour and would be endowed with the power to interpret and reproduce speech and, within limits,

to reason. One of the leaders of the fifth generation research team has compared the project to the space shuttle, in terms of the advances which could result for human knowledge.

The analogy is, perhaps unintentionally, apt. For it underlines both the nuge potential offered by computer technology, No national strategy has and the risks involved in exploit

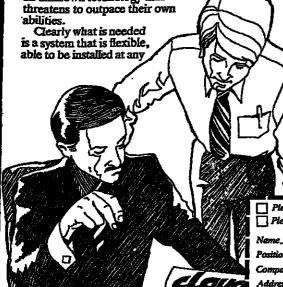
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COMPUTERS IV

Louise Kehoe in California charts U.S. reaction to Japan's assault on world markets

Two giants in battle for supremacy

"WE ARE at war with Japan-net the kind of war with guns and bombs—but an econom war, and we've got a big uphill battle to fight." That is how Charles E. Sporck, president of National Semiconductor, haracterises the competition petween the U.S. and Japan in

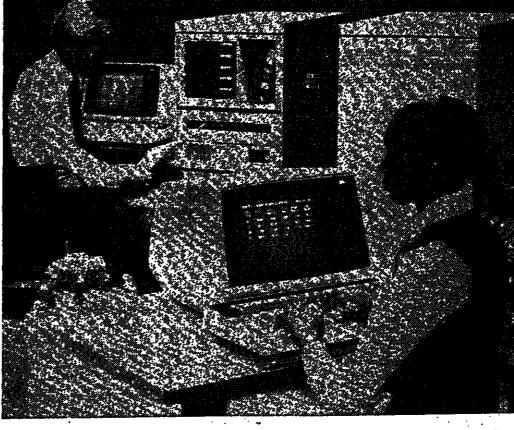
The stated intention of the Japanese to become a major force in computers is but one aspect of their desire to domiate electronics in every field; from consumer items, through computers and telecommunica ions. The mainframe compute market is the current goal, but along the way, the Japanese have targeted first the consumer electronics market, and now the emiconductor chip market. The Japanese have already you the lion's share of the

vorid-wide market in consumer

television

stereo, calculators, toys, and digital electronic the market In the latest round of this fight, most of the U.S calculators and digital watches have been driven out of the narket by low Japanese prices which they could not meet while maintaining profitability. The Japanese tactics are straightforward. They target sa particular market segment, use their excellent manufacturing skills to produce 2 good quality product, and then cut prices to buy market share. U.S. and European manufacturers (of cars, cameras and televisions) have called this approach "unfair." They talk about "predatory pricing" and dumping," and some call for government intervention to prevent excessive Japanese imports —but these are reactions that occur after the home industry has already lost a major share of its market. In semiconductors and computers, most U.S. industry representatives believe in a free market— but they look to Japan to open its doors to U.S. and European products before they will with-draw the threat of protectionist measures in the U.S.

The war in the semiconductor arena is still raging. U.S. electronics companies have been horrified over the past year, by the Japanese takeover of the key market for memory devices. Japanese manufacturers now supply 70 per cent of all 64K These are the chips used to build computer memory



Japanese companies are using joint ventures to gain access to the U.S. market. Above is a small general purpose information system sold in the U.S. by TRW-Fujitsu, a U.S./Japanese link-up

For the U.S. semiconductor industry this is little short of Although suppliers may recover some of the market in 1982, they can never expect to win a dominant Without experience building 64K RAMs, they may not be able to maintain their technology lead in other types of devices such as microcesors. And almost certainly, apan will also dominate the next generation of memory devices—256K RAMs.

Already, three Japanese companies have announced that they have sample quantities of 256K RAMs. While some U.S. companies are believed to be working on the 256, the very read fear now is that the Japanese have moved ahead in niconductor technology.

But U.S. chip makers are fighting back. Individual combegun highly successful quality improvement programs, and productivity programs designed to make them more competitive. Many companies have become involved in joint development

between two or more parties.

The most significant such agreement is that between Advanced Micro Devices Advanced Micro Devices and Intel, which covers a wide range of products. Another re-

creation of an industry supported research co-operative to fund long term research at US While U.S. computer makerş are uneasy about Japan's threat to the U.S. semiconductor industry, it has not stopped them

from taking advantage of the low prices being offered by Japanese suppliers. Even the semiconductor companies them-selves will buy Japanese parts to make systems products if the price is right. Reflecting the concern of

many U.S. computer makers, Hewlett Packard has published some details of its buying patterns in memory chips. The computer and instrument manufacturer reported last week that U.S. no U.S. supplier has yet met its expec 64K RAMs, although it expects next three years.

costs of a new family of devices maker, will continue to buy huge quantities of Japanese memory chips.

> For the U.S. computer indus-try, the failure of the U.S. semiconductor manufacturers supply the needed 64K RAMs means that they must rely upon their potential competitors for these parts since Japanese semiconductor makers also build computers. For example, a U.S. computer maker buying memory chips from Hitachi is also dealing with the manufacturer of large IBM type computer systems. In the back of the minds of U.S. computer makers must be the question of what would happen if the Japanese

company chose to cut off (or

down) supply of a key part. The Japanese challenge in computers has started at the bottom of the market with lowcomputers. personal Although few Japanese made systems have so far reached the U.S. or Europe, they are expected to become a major competition in their market in the coming months.

When Japanese personal computers are set alongside those built in the U.S., there will however, be some remarkable similarities. Already many parts of the systems are actually supplied by Japanese manufacturers, and then merely re belied by the U.S. systems

In computer periodicrais, "made in Japan" is beginning to appear on an ever-increasin percentage of printers, video terminals and other add-on At the low end of supply the peripherals for most U.S. systems companies. Even IBM, once the leader in printer

The hig computer makers are from the Japanese however they can be sure that it is not fac off. Aiready IBM has been computers in the market. Japanese mainfrom computer makers are building up their strength for an eli-ou assault on the U.S. and European markets, industry analysis beilieve.

Some Japanese built mair frame computers are already for sale in the U.S., but they por carry the name National Advanced Systems, a plug - compatible manufacturer. s Hitachi-built computers as

well as its own. Ironically, NAS is a sub-sidiary of National Semiconductor whose president is so outspoken on the subject of Japanese competition. While one part of National may be at war, another, it would seem fraterrising with the enemy.

NAS's involvement with a Japanese supplier is by no means unique. TRW Inc. has gone even further by forming a joint venture company with Fujitsu to market the Japanese company's computers in the U.S. So far the company is selling smail business systems and desktop computers. Later it may be expected to add Fujitsu's product line.

maintrame computer market is widely expected to follow the pattern of the TRW-Fujitsu company supplying the marketspecification requirements for force in this market over the ing and support services that are essential for large computer one U.S. company to do so soon. Japanese are coming" is an systems, and the Japanese com-Until then, Hewlett Packard, immediate threat to companies pany being responsible for

Big computers are still thriving, as Alan Cane outlines below

Vector processors bring fresh dimensions of power

seen in other sectors of the com- numbers—to operate at their puter business, but because, until fairly recently, mainframes were the only computers availwork, some time sharing, a lot able, that is hardly surprising. The reasons are embedded in the way computing underlies virtually every aspect of busi-ness life, and in the fact that

once customers have tastori computer power, they always come back for more. Those companies at present using minicomputers will want eventually to trade up to mainframes; those already using mainframes want faster and

more cost-effective machines. Against that background, it is easy to see why all the major not changed much since the manufacturers continue to put early days of computers. What substantial resources into their has improved the speed of combig machine research effort; why ICL, in particular, puts so much emphasis on big machine technology at the expense of minis and micros.

These days, of course, defining a big computer is difficult when a respectable mini can outperform a sizeable mainframe of only a few years ago.

Monuments

At the very top of the tree, the supercomputers are in a class of their own. These vector processors—so called because of their ability to operate on very large arrays of computing power.

in the world, the Control Data already started, so that a whole Corporation Cyber 205, runs at string of computations are "in up to 800m floating point operations a second (floating point operations are simply a measure of pure computing speed; millions of instructions per second (MIPS) are also quoted this is achieved by the direct but these figures invariably include some housekeeping in-to processor without interstructions—that is, not of direct mediate stages on the way. The use to the user).

built, the fastest commercially cessing. It is dedicated entirely available machine was the to number-crunching and Cray I, built by Seymour Cray, requires a second, smaller com-

SOME HAVE labelled the big computing.

computer the dinosaur of data processing, yet the market for big mainframes is increasing. It be fed the right kind of probis not showing the rapid growth lems-ones involving very big

> of file handling, they could be beaten hands down by a con-ventional large mainframe, But given long strings of numbers to chomp, vectors of more than 20 characters in length, they get faster and faster as the calculation goes on.

Supercomputers like the Cray or the Cyber, conventional business machines like the IBM 370/168, even pocket calculators, all compute in exactly the same way.

Computational methods have putation is the development of processors and memories on silicon chips together with a number of bright ideas to speed the progress of data through the machine.

Mr David Barkai, a big machine specialist at Control Data, points out that the chips used in the Cyber 205 go through one clock cycle in 20 billionth of a second (a clock cycle is another measure of machine speed—by comparison a good minicomputer might have a clock cycle of 600 billionth of a second).

Instructions and data are pipelined in the 205 which means that before one operation The fastest number-cruncher is completed, another has the pipeline."

Such a rate of computation requires data and instructions to be brought to the processing units at high speed. In the 205 movement of data from memory se to the user).

205 can carry out both vector
Before the Cyber 205 was and conventional (scalar) pro-

All this may seem very exotic in comparison with the mundane work asked of most busi- maturity. ness data processing machines, but David Barkai points out that vector processors are well suited to processing strings of numbers in, for example, payroll or inventory applications. When conventional computing technology has been pushed to the limit, vector processing may be utilised to provide more pro-

ssing power.
What kind of conventional big computer architectures are manufacturers offering at present? The short answer is that the hardware—the computers themselves — have become almost unimportant.

Performance

All the mainframe manufacturers—Amdahl, Burroughs, Honeywell, IBM, ICI, NCR, Univac and the Japanese Fujitsu, Nippon Electric and Hitachi—offer large computers which perform soundly and reliably. Customers might go to particular manufacturers for certain features—to Univac, for example for networking capa-bility or to Honeywell's Multics system for security, but what has become critical is the performance of the operating system, the software which controls the functions of the computer itself computer itself.

IBM, for example, is keen to see its big machine users move to an operating system it calls.

MVS (multiple virtual storage).

designed to "increase the integrity data security, high availability and performance of the system.

It is intended to provide good modification in systems where several thousand terminals are attached to the mainframe.

2900 series of large computers a modular design for both hardware and software, simed at in-

nell. It has a large IBM computer at its "front end" as its early implementations were less than robust and ICL users. are now hoping it will settle down and achieve a robust

> Burroughs with its Master Control Program (MCP), Honey-well with GCOS, Univac with well with GCUS, Univac with 1100 OS and NCR with VRX, all have mature operating systems with well-established characteristics.
>
> Perhaps the most popular method for increasing machine more is to use more

> performance is to use more than one processing unitthing that has only become economic since the development of the microprocessor.
> The chief reasons for using multiprocessor systems are to increase throughput — statistically it is more effective to run a number of jobs on a multiprocessor system than to divide them between a number of

uniprocessors—and because of the inherent robusiness in a system where the important elements are at least duplicated. For the future, multiprocessors will be used as the basis of what has become known as "data flow" computers.

This is still chiefly a research concept, but it is exciting in-terest in Japan, in the U.S. and

in this country. A data flow machine is in the final stages of completion at Manchester University (which has fair claim to be called the cradle of British computing). The simplest way of describ-

ing data flow architecture is to consider each number to be computed as having a tag attached describing the other. number in the calculation and the arithmetical operation to be performed. The other mapper is similarly labelled, and the response times (two seconds or two flow through the system less), reliability and ease of until they meet up and are modification in systems where processed. It is one approach to the difficult task of developing systems which can carry out ICL has developed for its more than one series of calculations at once, parallel process

It is by no means agreed dependence from changes in universally that the data flow Cray I, built by Seymour Cray, requires a second, smaller comformerly chief designer for puter to look after its house-control Data. He is now build legislated in the five 205s already installed is at the set new benchmarks for super-meters. Meteorological Centre, Brack-systems available, Like most of dinosant. approach is the right way ahead



1982 is Information Technology Year. It's a special year too, for ICL. A year of important new marketing strategies.

New Networked Product Strategy ICL is offering its new Networked Product Line which will meet the growing needs of distributed processing and office automation in

world markets. New approach to small system selling New ICL Computer Point demonstration centres will offer the small business community easier access to ICL's powerful, small computer systems with a wide range of application solutions, to meet businesses' real needs.

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ICL is introducing new commercial initiatives, under the banner Trader Point, to encourage distributors, software and systems houses to sell ICL small computers, like the DRS 20, which starts at a simple workstation, and can grow into a fully networked system.

New collaborations

New collaborations are taking ICL into engineering productivity with PERQ, personal computing with Rair, very powerful mainframes with Fujitsu, electronic private telephone exchanges with Mitel, and 'One per desk' workstations with Sinclair.

New force in information technology With its new products and strategies, ICL enters 1982 positioned to be a world leader in information technology.



The new ICL. Leaders in information technology.

Alan Cane examines moves by IBM, the world's largest computer company, to take advantage of rapid technology changes.

Colossus faces changes on an unprecedented scale

published late last year, about and GSD became blurred. the world's largest computer and office systems company

I-B-M Golossus in Transition
(Times Books 360 pages

That IBM is a colossus by any standards is not in doubt. Its revenues for the third quarter revenues for the third quarter Mr John Opel, IBM's president last year reached \$6.72hn, even said that the restructuring if earnings fell 22 per cent to \$693m, shaking the analysis. That it is in transition is also not in doubt and on a scale probably unprecedented since the earliest days of the com-

In October last year, it surprised the entire computer world by announcing a major corporate reorganisation.

It amounced that all its U.S. marketing and servicing divisions were to be combined into one group and its development and, manufacturing divisions

into two other groups.

At the turn of the year it announced similar plans for the UK. The message is simple; a newly formed Information Sys-tems Group will market all the companies product line, instead of three groups each with its own style of products.

These were the Data Process-



John Opel, IBM's president, has said that the company's restructuring would enable IBM to take advantage of rapid changes in technology and to co-ordinate

long-range planning

ing Division which tended to cater for large systems users, the General Systems Division which catered for the smaller computer user and Office Prowriters to word processors.

company and, some would say, to help the company in its antitrust suit with the Justice De-

But while that long-drawn-out saga has played to completion the data-processing world has been changing so much that IBM, which traditionally and almost of right has held over 60 per cent of the world sales of computers, found itself with only 40 per cent of the West European market last year, according to a survey by the London-based consultancy,

Logica.

The principal change is the new emphasis on smaller, more cost-effective, computers. Large machines are becoming smaller: small machines are becoming more powerful. Tasks which traditionally would have been the exclusive preserve of Data Processing Division (DPD) with its array of big machines, can now be handled by the offerings from General Systems Division (GSD). And as word processors grow more facilities and take on

WITH A PRESCIENCE perhaps data processing tasks as well as points strongly to a future marketing methods traditionally greater than he shew. Mr office automation activities, the where IBM becomes one of the used for large computers with

business by two or even the three marketing divisions. It produced confusion and firitation for the customers and

public embarrassment for IBM. would enable the company to take advantage of rapid changes in technology and to co-ordinate long-range planning.

The reorganisation came at the end of a year which had seen a remarkable spate of announcements from a company which is traditionally shy of publicity and which refuses steadfastly to whet market appetites by speculating on future product releases

One of the most significant announcements was the introduction of a microcomputer simply called the IBM Personal Computer — designed for the home market.

There are at least three important consequences of this launch:

• IBM has at last given its blessing to one of the fastest growing sectors of the computer market. Pioneered by companies such as Tandy, Apple and Commodore, the personal computer market had overtones of the hobbyist and the electronics enthusiast. As IBM does not cater for these categories of buyer, its introduction of a personal machine gave the market respectability and suggested IBM could see a broader future

That its future probably lies in home information and entertainment systems.

A battle is already developwho believe that information is best brought into the home electronically by viewdata technology (a combination of domestic television and telephone) and these who believe that the home computer terminal is the best bet.

Both approaches are under investigation, but in the U.S. the balance seems tipped towards the home computer.
Citibank, for example, has
launched its home banking
experiment around a computer terminal it designed and built itself. Chemical Bank is using a modified Atari 400, a home computer designed for television-video games.

IBM cannot have failed to ducts Division, catering for appreciate the value of the users of everything from type- market for these home terminals, anymore than it can IBM originally set up its fail to have appreciated how trinity of marketing forces to many large computers will be sharpen competition within the needed to run the databanks on which the service will

Significantly, IBM is big in banking everywhere and one role for the banks in home information will be to act as a central "switch" to information provided on other com-panies databases.

"Personal" computing for IBM has in the past meant computing for the individual professional—a terminal on the desk and a powerful program-ming language like APL giving the power of its big computers.

IBM is, of course, back in the bureau business in the U.S. (it was legally debarred from offering bureau services for some years after an antitrust suit with Control Data) and its first satellite (it owns a third of Satellite Business Systems) has been successfully launched.

The combination of IBM's processing power hureau coupled with datacommunica tions SBS and sales of personal computers in their thousands



The data-processing sector has been changing so much that IBM, which for long had held more than 60 per cent of the world sales of computers, found itself with only 40 per cent of the West European market last year, according to a survey by the London-based consultancy, Logica.

Above: IBM's series one 4952 processor, model C, which provides 32KB basic storage; one built-in diskette drive and four 1/0 channel positions, maximum storage of up to 128KB and a second diskette drive are optional.

Robert Sobel called his book, dine between Office Products dominant suppliers of computer high sales margins simply canservices — to the world.

The result was an often un-seemly scramble for the same adopted the unusual marketing tactic of buying space at

The company surprised the entire computer world in October last year by announcing a major corporate reorganisation.

branches of Chase Manhattan Bank in New York to sell to customers: "who might not otherwise be reached by our traditional marketing methods."

The company already has its own retail stores and has begun to authorise a select group of non-IBM retailers to handle its smaller and lower priced pro-Sears Roebuck, example, and Computerland are selling the Personal Computer. The bank selling points are

expected to sell typewriter ribbons as well as typewriters and the personal machine. It is all evidence that IBM understands very well that the

not be used with cheap, low profit products.

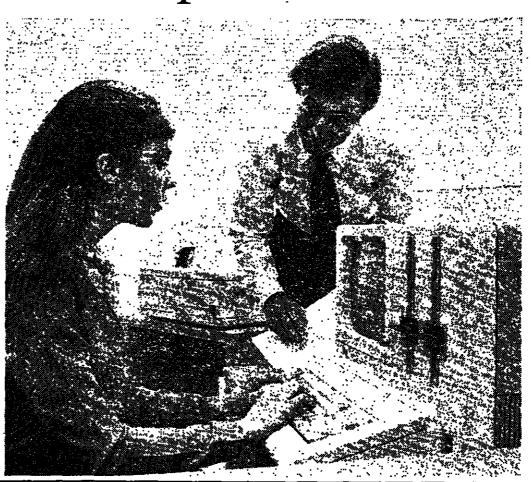
Office automation brings together all three divisions of the old-style IBM organisation. IBM is looking to sell its version of the office of the future in the first place to large companies with heavy text processing and file handling requirements.

The architecture it proposes is a central mainframe to conto a centralised database.

Text processing and manipulation is to be handled by the Displaywriter, IBM's low cost word processor, by the 8100 System, its distributed computing offering, and by the 5520 business administration system. Eventually all of these will be able to communicate with each other and with a mainframe. Text handling will be expedited by a piece of software called DISOSS. Some of these plans are already implemented; IBM

Selling such a system would have cut across all the old boundaries; IBM's new market-ing approach looks much more slike and aggressive. No part of the computer world can afford complacency when the giant of Annous is roused

is committed to completing the pattern within three years.



THE principal change now being seen in the West European computer market is the demand for smaller, more costequipment. Large machines are becoming smaller; small machines are becoming more powerful. Left: IBM's recently-

announced System 23, a small business systemits components include the IBM 5322 computer workstation, integrated diskette capability, 1,920character CRT display, additional diskette storcommunication printer attachment and the interpretive langage,

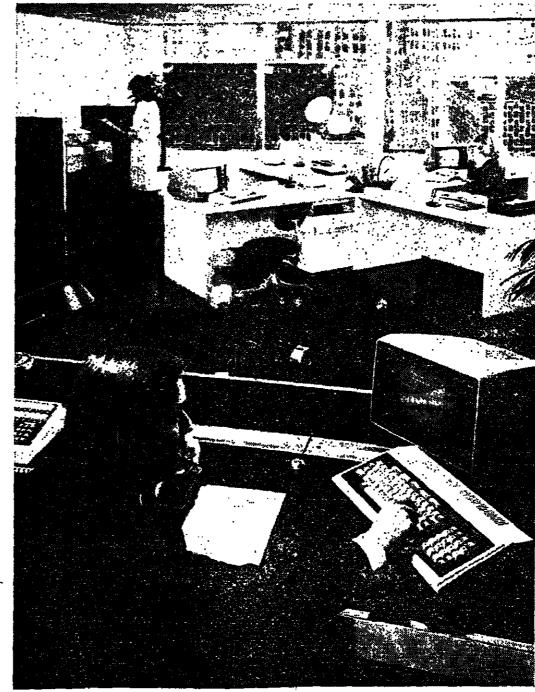
The new 5246 diskette unit contains up to two drives of 1.1 megabytes of storage each for a total capacity of 2.2 megabytes.

Models 021 and 022 can be attached to two 5322 computer workstations for file sharing.



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Another reason why NEC has earned the trust of customers the world over.



Louise Kehoe analyses the new breed now holding 20 per cent of the demand for general purpose central computer systems

It pays to be compatible in a \$43bn market

frame manufacturers (PCMs) are a relatively new breed. It Corporation installed its first IBM-compatible mainframe computer system, but already PCMs are estimated to hold close on 20 per cent of the market for general purpose central com-puter systems, currently esti-mated to be worth \$43.40n.

Plug-compatible manufacturers sell equipment that can either run alongside IBM systems or replace computers built by the "bluegiant." Plugcompatibles are typically dethat can directly execute all applications programs and systems software written for the IBM System /370, 303X Series, or 4300 Series com-

The driving force behind the IBM-compatible market is the more than \$300bn in existing IBM 370 user software estimated to be in place. Users want to protect their investment in software when they ment in software when they upgrade to a new system. This would normally tie them to IBM but now the PCMs offer an alternative. They attempt to compete with IBM by offering either faster delivery, lower cost or higher performance, while maintaining that all-important

Sales of IBM-compatible peri-

share of the total plug-compatible market. In fact, the widespread acceptance of plugpatible peripherals designed to replace IBM's own magnetic tape units, disc storage units and printers has been a major plug-compatible central pro-cessor market, by opening users' minds to the possibility of using non-IBM equipment alongside their systems.

Market leader

Several U.S. manufacturers, most of them based on the West compatible market. The princi-pal players in the market include Amdahl, which has concentrated on the high-end market segment with very high Advanced Systems, which matches its products to the middle range of IBM systems; (recently acquired by Moto-rola) which both compete in the low-end portion of the

Amdahl is the market leader flat," installed systems but in terms by the recession because buyers of the number of systems are more cost-conscious. But National Advanced Systems claims to top the list. chasing decisions so shipments According to industry sources, have not been as high as ex-National has approximately 700

IBM central processing unit," president of NAS. "Close to 80 per cent of the central main-drame computers in the world operate in the IBM environ-Users have come to appreciate that competition from plug-compatible vendors forces IBM

But the effort of keeping up with IBM's every move— whether a price cut or a new system introduction—has taken its toll among the PCMs in the past and many users have been reluctant to invest in systems be around to support them in the years to come. Today the although like all computer vendors they are feeling the effects of the economic recessions in the U.S. and Europe.

"The market is relatively Amdahl is the market leader flat," says Kvamme. "The with the highest dollar value of PCMs have been slightly helped users are delaying their purinstalled systems as compared is a subsidiary of National installed systems as compared is a subsidiary of National systems. The company uses to Amdahl's 570 and Magnuson's Semiconductor, was formed in some innovative air-cooled cir-

L'VOLUTION

OR OBSOLESCENCE?

in every seven or eight IBM Francisco-based Itel Corpora-compatible machines has a non-tion, to which it had formerly supplied computer systems.

NAS's current product line formance spans the 0.8m instructions per second (MIPS) to 15 MIPS range. Approximate IBM equivalent systems range from the 4341 through 3033 systems up to the 308X Series. National will augment its product line with a new system next few months and aimed at the middle range of the IBM 370 systems performance cap-

Japanese ties

manufactures medium-level systems at its San Diego factory but it buys in the higher performance sys-According to Kvamme, the Hitachi machines are converted to compatibility with IBM software by National. The Japa-nese systems account for about half of NAS's installed base.

Amdahl Corporation also has ties with the Japanese. The company is one third owned by Fuiltsu. Amdahl has concentrated on very high performance machines, some of which have not been as high as ex-pected," he adds. NAS, which outperform IBM's top range

1979 when National acquired cuits that were developed in "What this means is that one the computer division of San conjunction with Fujitsu and plug-compatible manufacturers turer now supplies.

Both NAS and Amdahl appear Both NAS and Amdan appear to be benefiting from their relationships with Japanese companies. In the long term, however, some analysts see a danger in U.S./Japanese joint developments of this kind, suggesting that they are merely a part of the Japanese strategy to enter—and eventually dominate the U.S. mainframe computer market. Already both Hitachi and Fujitsu are selling IBM plug-compatible systems in Japan and many industry watchers think that it will not be long before they enter the U.S. market in their own

At NAS, Kwamme says that that Hitachi may decide to market its systems directly in the U.S. at some point "We have talked to them about it,' he says. When and if it does happen, Kvamme envisages "some sort of joint involve-ment" with Hitachi, although he is not willing to spell out however, is that the Japanese computer makers aim to expand computer market. When they do, all U.S. manufacturers, including the PCMs, will have to fight to protect their market share.

Currently, however, U.S. which the Japanese manufac- are expanding their share of the mainframe market. According to IDC predictions, the plugcompatible share of the market will grow to 24 per cent by growth rate of 25 per cent. While the PCMs are expanding systems manufacturers who are

8 per cent of what is predicted to become a \$920n market.

market. Storage Technology Corpuoration, which has until recently specialised in peri-pheral devices, has stated its intention of introducing a plugunit. Late last year the com-pany acquired Magnuson (the losing market share, according to IDC. Burroughs, NCR and other non-IBM manufacturers had an 18.5 per cent share of the market in 1979. By 1986 to acquire Amdahi, which was they are expected to have only

founded by Trilogy is expected to introdu

Another rec the largest U.S. electronics or paries into the computer had strong contender in the low



A powerful and flexible small business system, the AM Jacquard J100 video-computer, is a fully expandable, multi-user system which carries out simultaneous data and word processing with communication. The equipment is manufactured in New Jersey; J100 systems in Britain range from £14,500

Paul Betts examines the outlook for important

mainframe computer manufacturers Tough times ahead for

IBM competitors DESPITE the worldwide evolving into the broader as

puter industry is still a major Joseph Kroger, president of Sperry Univac (the computer arm of the Sperry Corpora-tion), in his recent year-end

The statement may, at first glance, seem banal—but for one word. Mr Kroger, whose company ranks as one of the largest main frame computer manufacturers after IBM, suggests that the industry is still a major growth business. A couple of years ago, the word "still" would never have featured in such an address. It was generally taken for granted that computers were a major growth industry and would remain so for years to

Difficulties

But judging from the stock market and earnings' per-formance of the major U.S. will be remembered as the year when Wall Street started year when Wall Street started to have serious misgivings about the growth prospects of the large computer companies. The outlook for 1982, at least in the opinion of the Wall Street electronics industry analysts, will be another difficult year for the histories. difficult year for the business. Mr Sanford Garrett, an analyst with the Wall Street investment house of Paine Webber Mitchell Hutchins, says that all the large non-IBM computer manufacturers will continue to face difficulties as a result of the uncertain and gloomy outlook of the U.S. economy as well as those of other industrialised countries.

Moreover, ali large main frame computer companies have been suffering from the effects of the strong dollar effects of the strong dollar and currency translations which have depressed and distorted earnings. Even with the recently announced changes in the financial accounting standards board's FAS-52 accounting rule, these companies will continue to suffer from the negative impact of currency translations and the dollar in the year which has just begun. year which has just begun,

If 1981 was a year when the computer industry lost much of its glitter among investors, it was also a year when the principal IBM competitors took stock of the changing character of the traditional computer / business and market. "Each week comin the industry fiercer not only in the United States but in all the international markets, says Mr Kroger. "The tradi-tional computer business is "The tradi-

of information processing where the differences between cations is continually becoming harder to distinguish." He adds that although his company expects the value of all computers installed world-wide to increase from \$136bn in December 1981 to \$217bn in 1986 (or a compound growth rafe of almost 10 per cent annally), "The future in the computer industry belongs to those companies which are forward looking, trim and

change or rather evolution in the computer market has led to a scramble of major company reorganisa-tions and new strategic planning. In a sense, Mr Garrett of Paine Webber suggests, the reorganisations which are being undertaken by most leading main frame manufactarers—from Sperry Univae to Honeywell and most important of all at Burroughs-follow the lead which IBM has been setting in reorganis-ing itself in the face of a ortant of all at Burroughs-

the face of a changing market.

The IBM moves only surfaced last year but they have been in the makings for a considerable time. With IBM sharpening its focus on the market, placing the emphasis on customer relation, becoming to all accounts. tion, becoming to all accounts far more market sensitive far more market sensitive than it ever has been in recent years, the computer glant has signalled its intention of seek-ing to maintain its dominant position in the computer market. "The rest of the pack could hardly stand still," one Wall Street analyst remarked Wall Street analyst remarked. In the case of Sperry Univac, the computer division of Sperry embarked on a major restructuring early last year. "To date," Mr Kroger explained, "we have centralised and consolidated a mimber of overlapping functions throughout our organisation and have shortened the adds that more significantly. Sperry Univac is changing the way it does business and

But for Sperry this year will be tough for a number of specific reasons. Its farm equipment subsidiary is suffering from a poor farm sycle, its Vickers division, which makes hydraulic and fluid power systems, is expected to be sold, and Sperry Univec is in the middle of a product cycle with no major new proexpected announced until 1983.

improving service to cus

At Honeywell, too, there has been considerable retion during the 18 months including as from

Like Sperry Enive

cycle. But perhaps the biggest Honeywell's 47 per cent stake in Cil-Honeywell Bull, the French loss-making main frame computer manufacturer. Honeywell is negotiating the sale of a substantial slice of its interest in the French company as a result of the impending nationalisation of company which controls the French computer maker. But until the Cil-Honeywell Buff sue is eventually resolved, he uncertainty is likely to

Holding up

Control Data has held up better than most. This in part reflects the company's strong position in the peripheral business. But the business is economy and could suffer in the first half of the year. Mr Garrett sees little economic

corporate reorganisation to steking to improve Barroughs customer service and make up for all the ground the company lost during the past five years or so. He also took the market place by surprise at the end of last year when he agreed to take over Memorer. the financially-troubled data storage equipment manufac-turer. Although in the short run, the acquisition could hart earnings, in the longer term the lakeover could well

The concept that the dodo wasn't able to grasp was planning for tomorrow, today.

With computer technology advancing so rapidly can you be sure your storage systems of today are not heading for extinction?

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HEWLETT-PACKARD

Strong computer growth

HEWLETT PACKARD is the second largest manufacturer of minicomputers, after DEC. Originally, Hewlett-Packard's main business was in electronic testing and measurement in which it is still a major force in the world.

Hewlett-Packard first began making computers in the mid-1960s when it found that its electronic instruments were becoming so fast they could no longer be read by a human operator. A computer was developed to read and analyse the rapidly-produced

Today, the computer husiness has outgrown its test and measurement division: Computers account for 49 per cent of sales, test and measurement 38 per cent medical products 8 per cent and analytical instruments 5 her cent.

For the first ten years, Hewlett-Packard concentrated on producing minicomputers for strictly technical use. But in the mid-1970s it developed a business computer.

The HP 300 series are the company's higgest computers and used in general business applications, and are its best selling. Hewlett-Packard has not yet introduced a 32-bit computer to compete with those of companies like DEC. Data General and Prime although it is expected to do. so sometime this year.

One of Hewlett-Packard's main strategies is to become a major supplier to manufacturing companies where it hopes to sell companies an extensive range of all its products from control of equipment on the shopfloor to financial information, on the largest systems.

It has just opened its first software development division in the world in Britain.

> SALES AND PROFITS 1981 1980

3,578 3,099 +15% Pre-tex profits 580 520+11% (Year end October)

After a decade of swift growth, the market looks more uncertain. Jason Crisp reports

Duller shine on minicomputer industry

minicomputer industry is that needs. it will inevitably be squeezed. at one end, by the falling prices of mainframe computers and, at the other, by increasingly powerful microcomputers.

Through the 1970s a number minicomputer companies were developed by tiny groups of computer engineers into substantial companies. While many projects fell by the wayside, the 1970s were occasionally dubbed as the decade of the minicomputer.

Digital Equipment (DEC), which has dominated the industry and spawned (unwillingly) several new companies, was formed nearly 25 years ago. In 1960 it produced its first computer aimed at the scientific and engineering community at a fraction of the price of a com-

its customers for that computer more than the most basic soft- computers. bought DEC's first computers equipment

DIGITAL EQUIPMENT was

the first company to produce

minicomputers successfully.

It has dominated the field

ever since with a meteoric

growth that has made it one

of the largest computer com-

DEC will celebrate its 25th

birthday later this year when

it expects to complete its

financial year to the end of

June with revenues of about \$4bn and possibly be the

second largest computer com-

pany in the world. IBM is

While other minicomputer

manufacturers have been

and high U.S. interest rates

causing customers to defer

purchases DEC has continued

to advance. In the first

quarter of the current finan-

cial year profits soared 58

per cent, partly due to sub-

stantial interest income and also cost cutting,

nanies in the world.

many times larger.)

DIGITAL EQUIPMENT

More diversification

THE BEARISH view of the could look after their own

DEC's first minicomputerthe late 1960s. As computer software and systems houses produced application software for the computer a new market opened in companies and

mainframe computer.

world with revenues last year of \$3.2bn. The company, based in an old mill outside Boston, is still run by Mr Kenneth H. Olsen who had founded it. Hopeful computer young engineers setting up their own companies, often round Boston's Route 128 area still hope to repeat Olsen's feat or that of parable mainframe.

Data General, set up 13 years the squeeze from mainframes.

Unlike IBM, it did not offer ago by Mr Edson de Castro who and microcomputers. Not yet once designed DEC's mini- anyway."

manufacturers DEC,

SALES AND PROFITS

Revenues 2.4bn 3.2bn 35 Net income 250m 343m 37

Year ends June

One effect of the recession

is that DEC has been able to

cut its very long lead times

of over a year to deliver a

computer down to several

months. Although the com-

pany's strong growth has

been based on a number of

products including the PDP-11 minicomputer and its disc

drives the greatest success

has come from its 32-bit VAX

minicomputer introduced four years ago. But even

DEC is having to tighten its

Increasingly IBM is be-

coming a more direct com-petitor for DEC. Late last

1981 %

(OEMs) which wrote applica- immune to problems affecting serviced the minicomputers, the PDP 8-was launched in OEMs account for more than 50 orders pared thin. per cent of sales of some manufacturers.

It meant that companies like DEC, Data General and Prime could expand manufacturing organisations who could never rapidly with a smaller burden have afforded, or justified, a of sales and support staff. But as the companies have grown, DEC is now one of the largest and the market has become computer companies in the softer, the manufacturers have become keener on selling to the end-user of their products, and avoid paying the OEM high discounts.

The growth rates of 40 per cent and more of the 1970s have begun to look less impressive. The shine, says one analyst. has come off the minicomputer industry; "But not because of Data General, set up 13 years the squeeze from mainframes

Softening demand from The minicomputer manufac- OEMs and recession in the U.S. which seemed at first and Europe.

tions software, installed and the industry last year, has seen manufacturers announced their to one. A number of companies its once over-long backlog of

> turers are looking to a new battleground where they will face formidable competition turers are beginning to feel head on. Last year a number of some tougher competition from leading manufacturers of mini- microcomputers although computers including DEC, Hewonly represents a very small lest Packard, Data General and part of their total business. The Wang declared their strategies manufacturers of the so-called in office automation and demon-supermicros are selling to strated a range of products potential minicomputer cuswhich either are or shortly will be available.

> board and not just from other the minicomputer manufaccomputer manufacturers. It turers as they themselves did to ranges from IBM and Xerox to the mainframe computer comtiny companies with specialist panies previously. The super-innovative products and sysmicros—with 16-bit microprotems and includes the telecom- cessors—are twice as fast as the munications industry. The market for office automathose from Apple, Tandy, Com-

tion equipment remains relalively small. Several potential users of office automation are ware or any service and supThe minicomputer manufac- OEMs and recession in the U.S. showing considerable interest
port. The universities and turers often succeeded because and Europe together with high but it is mainly confined to the
research institutions which of high sales to the original interest rates are blamed. Even largest companies in the U.S.

U.S. last year most were aiming including The minicomputer manufac- for the Fortune 500 companies

—as everyone else is,

The minicomputer manufactomers at significantly lower prices. In other words they are The competition is across the trying to do the same thing to standard microcomputers like

> cessor chips. One of the main advantages of the supermicro over the ent categories of computer "standard" microcomputer is manufacturer become increasmicrocomputer is that it can be used by up to ingly blurred.

modore and Sinclair which are

based on eight-bit micropro-

When the minicomputer five people at once as opposed office automation products in the are manufacturing supermicros Altos. Graphics, and Convergent Technology in California. Britain's large computer company ICL is

> Rivers a small U.S. company. Although the minicomputer manufacturers may be suffering a squeeze they, too, are producing both smaller and larger computers.

supermicro, made by Three

The fastest growth area in minicomputers is in powerful 32-bit machines. DEC which launched its 32-bit VAX family four years ago has the largest share of the market.

As minicomputer manufac turers widen their product ranges from powerful 32-bit machines to small wordprocess ing micros and office automa tion so new competition encroaches on them and the boundaries between the differ-

26 per cent stake in Systime in

1977 for £500,000. About a year

of shares were sold to a Scot-

tish Investment house, the

NEB's holding was valued at

years. It is being financed by

a loan from the European In-

vestment Bank, selective grants

Based in Leeds, Systime is

SYSTIME

Advance continues

DATA GENERAL

Changing its tough image

UNTIL THE LATE 1970s Data General used to revel in its to manufacture under licence a reputation as the roughest and toughest company in the minicomputer business. It could afford to as it had a startingly fast growth rate and exceptional profit margins, notably better than Digital Equipment the industry leader.

Until the middle of fiscal 1979, Data General's pre-tax margins were about 20 per cent, but by 1981 these had been more than halved. Sales growth fell nearly 50 per cent in 1976 to 13 per cent in 1981. Profits in 1981 fell to \$40.9m from \$54.7m the previous year.

There were a number of reasons given for its fall. The company pointed to the weakness of the minicomputer market and exchange losses. In addition it faced a number of other problems including too centralised decision-making, slowness in introducing a 32-bit minicomputer (it was about three years behind DEC), costly litigation and an overdependance on selling to original equip-ment manufacturers (OEMs).

There has been significant reorganisation of the company SYSTIME is the second largest manufacturing control systems which has been split into three including a flexible machining divisions, one selling computers system which can control robots to large companies and for divisions, one selling computers scientific applications, another to small businesses and a third to OEMs. There have been a number of management changes and decentralisation.

Before the reorganisation Mr Edson de Castro, the founder ago, when another major block who had designed the PDP 8 minicomputer at DEC. was criticised for taking all the decisions. The company's 32-bit minicomputer is selling well, although in much smaller numbers than DEC's. It has also building a new factory costing £30m over a period of four now gone out of its way to live down its rough tough image and pay greater attention to customer satisfaction.

> SALES AND PROFITS 1980 1981

653.9 736.9 +13 Revenues Net income 54.7 40.9 Year ends September

The VAX 11-750, one of Digital's powerful mid-range computers

year DEC announced its strategy for the office automation market where it will meet not only IBM head on but a host of other com-

DEC employs more than 63,000 people worldwide, of which about 3,000 are in the

UK. Last year the company spent \$398m on new build ings and equipment, some 90 per cent higher than the previous year. This is expected to rise to \$500m in the current year according to Mr Kenneth H. Oisen, DEC's president and founder.

and machine tools linked to an automatic conveyor.
The National Enterprise start in the early 1970s it has Board—now part of the British Technology Group—bought a

grown rapidly. In its latest results, just published, sales rose by 33.5 per cent to £32.1m. Systime began in 1972 as an original equipment manufactur-er using DEC computers pro-

viding turnkey systems to a range of small businesses. It began its own manufacture of a limited number of components in 1975 and now makes most of its own printed circuit boards, video display terminals, and cabinets. DEC still supplies the central processor for its minicomputers. Systime has also developed, from the Department of Indus-

and begun producing, a micro- try ar computer for small business, funds. independently of DEC.

try and internally generated Systime is expected to go

£5.3m.

It is selling a number of public in about three years.

1981 1980 Turnover: £32.1m £24.06m Trading profit:

SALES AND PROFITS

(+33.5 per cent) £2.2m

GOODSYEDATASAAB

- -What's happened? -Datasaab is no more.
- -What, the company?
- -No, just the name.

-Well, haven't you got a new name? -Of course. We were given it as a new year's present. CSSC EORWAT SYSTEMS

-Datasaab? Ericsson information Systems? What's going on?

—Yes, it is a bit complicated at first. I'm not really used to it myself yet. Let's take it word by word. You start.

 Datasaab. Let me see. To me Datasaab means Alfaskop and bank terminals. And business systems Series 16. And didn't I read something about you being taken over by some telephone company?

-That's right. Ericsson. Although "some telephone company" is no way to talk about one of the world's leading telecommunications suppliers. The Ericsson Group has over 70.000 employees spread throughout 100 countries. So we're not lacking in resources. Or technical knowhow.

-OK, then I suppose the word Information refers to this new office automation age the papers have been full of lately. Just about every computer supplier is talking about systems that can communicate with each other, no matter where they are, and telephones and teletex and distributed data processing and...

-You're on the right track. But watch out for the people who sold that very fine cloth to a certain king. They're still around. And for others making claims they will have a hard time justifying. To make the kind of systems we're talking about demands a very high level of system knowhow, it also demands access to considerable resources and the ability to coordinate them within a number of decisive system areas.

-Systems?!?

-Ericsson Information Systems! A completely new company created by the Ericsson Group through a merger of three different company units, each with a unique area of competence needed to develop a genuine integrated information system. You'll hear from us soon.

ERICSSON 🗲



SYSTEMS LIMITED SWAN OFFICE CENTRE. 1508, COVENTRY ROAD. YARDLEY. BIRMINGHAM, B25 8BN. TELEPHONE (021) 707 3050

The microcomputer business is now a major industry with world-wide sales of more than \$1bn. Guy de Jonquieres reports

A success story that surprised the giants

more forceful demonstrations microcomputers from other fessional of microcomputers. were quite literally put together user. in back rooms and private. But within these broad para-garages — the microcomputer meters lies an increasingly wide business has mushroomed into range of equipment. At the a major industry with world lower end the hugely success-wide sales of well over \$10n a ful British made Sinclair ZX-81,

seems set to continue, perhaps though its limited speed and even to accelerate, in the coming processing power make it more decade. In the U.S., which suitable as a learning aid than already accounts for 40 per cent as a problem-solving device. of microcomputers in use worldwide, annual sales will reach about 2.6m units in 1983, three which, when equipped with times more than in 1979, accord-appropriate software and ing to International Data Cormemory capacity, can undertake poration, a market research a range of useful data process-

can be misleading in an industry cial planning and word processas fast-moving and as protean as ing.

than the phenomenal growth applied to machines compact humble beginnings in the mid-desk, costing up to £15,000 and which 1970s - when the first machines usually dedicated to a single

But within these broad parawhich sells for less than £70, is This vertiginous growth rate undoubtedly a microcomputer, In the middle of the market there is a wide choice of micros

These Dogmatic product definitions accounting, stock control, finan-At the upper end of the price

THERE HAS probably been no the frontiers which separate designed for scientific and pro- little users, including experience. of the practical consequences of types of data processing equip- engineers and architects. Such the microelectronics revolution ment. The term is generally machines offer high perform-'ance for their size and increas-From enough to sit on or under a ing feature display screens which can show detailed graphics, including three-dimensional simulations.

An example of this newer type of microcomputer is the Perg, developed by Three Rivers of the U.S. which is to be made and sold under licence by ICL of Britain. At present the Pero costs £25,000 in the UK though the price is expected to fall sharply once it enters volume production.

The microcomputer market was pioneered by young, entre-preneurial companies like Apple, Commodore and Tandy Radio Shack of the U.S. Their founders were in many cases youthful electronics engineers who were enthusiastic about the potential for applying micro-electronics to computing but had

The huge success of their products took them - and many of

the established giants of data During the early years of the microcomputer boom, most of the mainframe manufacturers from IBM down stood on the sidelines, apparently uncertain how to tackle this new market. For big companies, used to selling expensive systems to professional customers, to gear themselves to selling microcomputers entailed as big a change of attitude and organisation as would be required of a manufacturer of printing presses who decided to diversify into type-

of \cdot the. early attempts proved disappointing. Texas Instruments, though a major ducts from chips to calculators, found it hard to penetrate the microcomputer market. Signi- making no attempt to mono ficantly, Texas' first machine did polise the supply of software not succeed, partly because the 'for it — on the contrary, it is company insisted on trying to actively encouraging software

it. The microcomputer pioneers, for it. with their shoestring resources, relied on outsiders to write software for their products.

But the bigger computer manufacturers recognised that the market was becoming too important to be ignored much longer. Perhaps single most important event of 1981 was IBM's decision to launch its Personal Computer. which will compete directly with Apple, Commodore and the

departure for IBM in more ways than one. The company has long been used to setting the pace in its traditional markets. But the new Personal Computer bears many signs of having been designed after a careful study of rival machines to select and incorporate their best features. Furthermore, IBM is clearly

IBM's major announcements are awaited with some trepidation by its competitors. But in this instance the reaction of other microcomputer manufacturers has been symptomatic of the buoyant mood of the industry.

Welcomed

Most, after inspecting it, have pronounced it a good and well-priced machine which should sell well. But far from expressing concern that IBM would dominate the market, other companies have forecast that IBM's muscular marketing effort would help to raise the level

of microcomputer sales overall. Until now, manufacturers say. most microcomputers have been sold to small- and medium-sized businesses, which used them as self-contained machines to carry out a mage of tasks. If such businesses had used puterised systems at all in the past, many would probably have

computer bureaux.

There is still plenty of room for growth of this market, which is certain to remain a mainstay of microcomputer sales for a number of years. The potential in the UK has been underlined in a recent study published by Lancaster University's Depart-ment of Marketing, which estimated that only 10 per cent of small British companies have their own small computers.

But other market sectors are developing fast. At the bottom end of the market, the success of the Sinclair ZX-81 has demonstrated that a big demand exists among the general public for an inexpensive home computer. Commodore recently launched a £200 machine, the VIC-20, and clair does not attract direct competitions in the near future. At the other end of the scale,

are now planning to buy microcomputers for use as work-

provide most of the software for companies to write programmes entrusted these operations to and managers. In many cases it. The microcomputer provides will be linked to gether in networks by means of circuitry which will enable data

to be transmitted between them. This type of system allows a considerable increase in the pri cessing power available to the individual user, all the more so if the microcomputer between cessing installation. It also pe mits the microcomputers. used as desktop terminals electronic mail.

In the U.S., where telecon munications is cheaper and less hedged around by regulatory prohibitions than in Western Europe, many microcomputers have already been plugged into the telephone network.

The owners are able to tap it will be surprising if the Sin- into a wide variety of data bases all over the country and to communicate with each other. Hobbylsts have started coma number of large companies -puterised sale and wanted services, while professional users regularly trade software over

Pocket calculator pioneer

SINCLAIR RESEARCH was astonished the world by intro- aimed at the same market but preneur who has had long ex- ZX 80. perience of the fiercely competitive world of consumer electronics. It was Sinclair who introduced the world's smallest television set, a black plastic digital watch, and, was among the first to sell pocket calculators in the UK.

Having cut his association with his first company which was partly owned by the then National Sinclair

machine was ideal for people who wanted to learn about the computing before committing themselves to a more powerful machine. Early in 1981, a second model, the ZX 81 was introduced

formed in 1979 by Mr Clive ducing the cheapest personal offering greater flexibility for Sinclair, the 41-year-old entre- computer on the market, the the user. This machine has been sold throughout Europe and the company claims that production is running at a rate of about

> In October last year Sinclair Research concluded a deal with Mitsui to export the ZX 81 in volume to Japan. It aims to sell 20,000 in the first year and 50,000 the next.

In addition to its Japanese connection, the company has also agreed to supply machines American Express for its mail order business

Have you recently

found yourself

becoming an involuntary

non-profit organization?



Centre: Mr C. Sinclair, founder and chairman of Sinclair Research; left: Mr M. Ohtaki, assistant general manager, London branch and managing director of Mitsui Machinery Sales (UK); right: Mr H. Shimizu, manager of Mitsui Computers

Exploiting use in

COMPETING with Commodore and Apple for the leading position in the microcomputer market is Tandy, the radio and electronics goods group which retails through its own

Tandy began selling computers in 1977, following the slump in the U.S. sales of citizens' hand radio equipment which had gone through a period of rapid growth in the early to mid-1975s. Tandy saw the home computer as the emerging market and therefore developed its own systems,

personal computers accounts for about 15 per cent of total sales which in the year ended June 30 1981 were \$1.7bn, an increase of 22 per cent on the previous year. Profits at \$169.6m had improved by 51 per cent over the previous year.

Now there are about 6,700 Radio Shack outlets in North America, plus some 750

microcomputer models ranging from a hand-held com-puter (made and designed in

Since microcomputers continue to be an expanding area for sales. Tandy is likely to increase its efforts in associated telecommunications and

greater the home

Expansion

Tandy had its beginnings in a leather goods and crafts business in Fort Worth, Texas, but it bought Radio Shack. a Boston-based company with nine shops and a mail order business, in 1963.

Tandy shops in Europe, Japan and Australia, with a further 475 shops planned. in 1981 Tandy introduced three

Japan), a business machine and a microcomputer aimed at the home-user market.

computer products.

BBC is partner for teach-in series

ACORN IS a British company end of 1982, founded in Cambridge three Schools ge years ago. Originally the company marketed the Atom, a pernal computer which was made

Recently it began full production of the microcomputer it has designed for its partnership with the BBC for a computer teach-in series which will begin early this year. The television series was delayed for about a month because of the un-expected heavy demand from the public to buy the com-

Acorn has doubled its produc- bridge when Mr Hauser came tion to 10,000 a month through manufacturing agreements with ICL, at Kidsgrove and Cleartone at Newport. The company's products are aimed very much at the educational and home markets and was chosen as a preferred machine for schools by

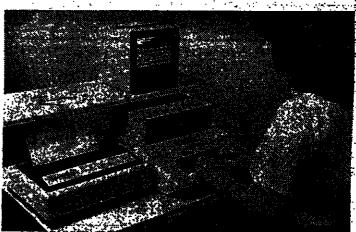
Schools get 50 per cent sup-part from the DoE for the cost of buying a computer if they chose Acorn or Research Machines computers.

The company was set up by Mr Hermann Hauser, Austrian and his friend Mr Chris Curry. They met at Cam



to learn English and later completed his PhD at Kings College.

Its first product was called System I available through mail order followed by its Atom microcomputer. Sales in 1980 the Department of Education £230,000. This year the company which aims to put a microcom- expects to achieve a turnover inputer in every school by the excess of £5m.



The £40 "Apple Writer" word processing programme in use

A fruitful way to education

STEPHEN WOZNIAK and Steven Jobs were computer hobbyists who set up business in 1976 to sell the micro-computer they had designed. Mr Johs sold his car and programmable calculator to raise the US\$1,200 capital to set up business in a garage. Five years later the com-

earnings rose

\$39.42m and the name Apple is widely known in the business world. Early in the company's development the two men realised that they were on the threshold of a multimillion pound business and sought the help of professional managers such as Mr Mike Markkula who became chairman of the company.

More than 2,500 employees work for Apple with manufacture of microcomputers in the U.S., Singapore and Cork which are sold through 4,000 dealers worldwide.

By the beginning of December 1981, Apple had sold more than 300,000 microcomputers since 1977 with a strong bias towards the educational market which is the largest market for such equip-ment after the business sector.

In fact, the company set up non-profit foundation to help support the development of microcomputer projects in education and training. In 1981 the company provided the equivalent of \$460,000 worth of development for computer assisted learning systems.

However Apple does not limit itself to the educational field although it claims to be the leading company in this sector. Like its main competitions. tors. Tandy and Commodore, it seeks professional users because applications in lador try and commerce dominate the whole of the micromputer market.

Superpets for businessmen

Among the three leading microcomputer manufacturers. Commodore stands out because it has a long history of survival in the consumer electronics field. It came through the fierce pocket calenlator price-cutting war of the mid-1970s which spelt disaster for many other electronies companies.

In 1981, Commodore achieved its best-ever sales results of \$186.5m which was 48.5 per cent higher than the previous year. Much of this sales growth is accounted for by sales of microcomputers and associated systems. Microcomputers accounted for 71 per cent of overall sales com-

that the percentage will increase even further this finandal year.

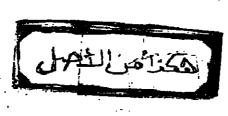
Yet it was only four years ago that the company intro-

commodore

duced its first microcomputer selling for less than \$1,000. When it entered this market it tried to sell its system at the lowest price to discourage competition at the outset in the hope of avoiding the price wars of previous consumer goods. As with other manufacturers the company has found that a substantial number of its systems go to the business world.

Its machines are the PET and the VIC models which come in many different versions. In 1981 it introduced two models the VIC 2 which Commodore describes as a colour computer for the price ef a home video game. This is intended to attract the home users who may now be bored with their video casseile recorders. The second machine is a superpet which is almed at the husiness community. because professional applications of microcomputer are likely to remain the largest market for the near

ELAINE WILLIAMS



The earnings reports of many companies are

(We mean those depressing bow-legged punctuations

In fact, the problem of diminishing profitability is

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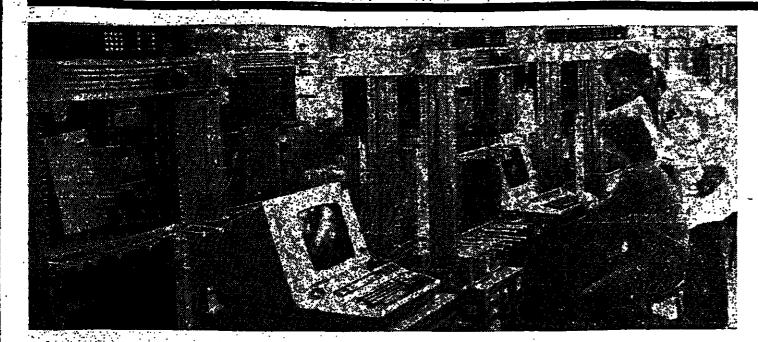
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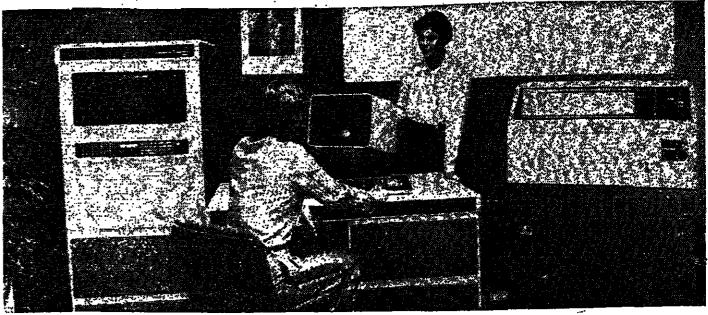
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Production tests (left) being made on ICL's ME29 range of high-performance, multi-purpose, medium powered computer systems. Right: the ME29 range, showing the processor cabinet, which contains the central processor, plus up to 1m bytes of main store; a new, multi-purpose workstation is on the control desk which also houses the Module 10 fixed disc stores. On the right is a PBS line printer

Every new product must be designed to communicate across the network with all other equipment in its range

The web ICL believes is worth spinning

computers. For Britain's ICL, which is Europe's only indigenous mainframe comindigenous mainframe pany, it almost proved fatal. Battered by a serious reverse in its fortunes, ICL plunged deeply into loss and for a period early last year seemed in danger

The company is now fighting its way back. Its energetic young managing director, Mr Robh Wilmot, who was appointed last May, has been working at high speed to reorganise its product range and to cut costs by shedding staff and trimming overheads.

Its new chairman, Mr Christopher Laidlaw, a former deputy character base of British Petroleum, has been struggling at the same time to bring the company's finances back on an eyen keel. Like Mr Wilmot, he was appointed at the instance of the Government, which granted ICL: a £200m loan bargain basement level. guarantee last March to enable it to continue borrowing.

The company's results for the last financial year to the end of the second half of last year, September were predictably after falling in the previous six biggest machines which IBM chastly a net loss of 1133.1m months. Reassuring customers has to offer. on the first of 11.1m, down has been one of Mr Wilmots His philosophy is based on from 17.15.8m the previous year. Top priorities. To do so he has the conviction that the future

jobs cuts, factory closures and other rationalisation moves. Mr Laidlaw has declined to

current year, though he expects. painful surgery, the company clearly believes that it has come through the worst and can now look forward to a steady return to health. It hopes to return to profit within the next year, even there is no improvement in the general economic situation.

City confident.

Its confidence appears to be shared by City institutions which were until recently very bearish about its prospects. Last month, they enthusiastically supported a £32.1m rights issue to enlarge ICL's shrunken equity base, though the issue was admittedly priced at a

Equally important, customer confidence appears to be flowing back. Turnover rose slightly in

product plans up to the mid-

When Mr Wilmot took over, make a profit forecast for the ICL had not only been ravaged by a combination of recession. losses to continue during the high interest rates and the first half. But after its recent strength of the pound; it had also been weakened by the burden of developing and sustaining its range of larger computers, which had absorbed most of its financial and technological resources and left it poorly placed to compete in a market where growth was increasingly coming from smaller

> Mr Wilmot is adamant that ICL must remain a supplier of mainframe computers, which he believes will continue to play an important role in tomorrow's market. But he has taken steps to streamline its product range. by reducing the number of medium-sized mainframes from eight to three, each of which can be upgraded in power. He also plans to extend ICL's pro-duct line upwards to include very powerful computers which will compete directly with the

THE PAST year has been a The loss included an extrataken the step, highly unusual trend in computing is towards Wilmot is not trying just to compatible market.

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The loss included an extrataken the step, highly unusual trend in computing is towards without is not trying just to compatible market.

The loss included an extrataken the step, highly unusual trend in computing is towards with the current state of the contract of the market but to anticipate the contract of the contract of the market but to anticipate the contract of t information-processing equip and intercept future develop-ment, from the biggest main- ments in technology. frame down to desktop microcomputers and terminals into effect, Mr Wilmot has

> and data communications. approach is that every new has been the appeal of ICL's product which ICL introduces international marketing netmust be designed to communicate across the network with all most extensive of any com-the other equipment in its puter company outside the U.S. range. Furthermore, ICL products must also be able to communicate with equipment a rapid-fire succession of
> manufactured by other companies. An important Wilmot with other companies notably: objective is to surround equipment made by other manufacturers, particularly IBM, with

Bold strategy

This is a bold strategy, whose implementation requires resources much larger than those which ICL can muster on its own. It calls for an aggresentry into fields in which ICL had little practical experience, notably office equipment telecommunications techand nology.

Clearly, too, it involves an the first occasion on which ICL element of risk, since Mr has entered the IBM "plug-

To help put this programme designed to handle both voice turned to other companies for products and technology. His itself market ICL's new DRS A central tenet of this principal bargaining counter pproach is that every new has been the appeal of ICL's work and customer base, the and Japan. During the latter • With Fujitsu, one of Japan's leading electronics groups. Fujitsu will supply ICL with microchips and semiconductor technology—which Mr Wilmot says is the best in the worldto be used in ICL's new range

> Fujitsu is also acquiring ICL's only microelectronics plant, in West Gorton, near Manchester. ICL has agreed to market in Europe from 1984 very power-ful Fujitsu computers which market from early this year a use the same operating systems as IBM machines. This will be the first occasion on which ICL

mainframe computers.

private exchanges Mitel will supply a (PBXs). powerful PBX, which ICL plans to market outside North America from 1983, and may small business system.

• With Three Rivers of Pittsburgh, a small American venture capital company. ICL has secured manufacturing and marketing rights on the Three Rivers Perq, a powerful professional microcomputer. ICL will contribute to the further development of the Perq and to the design of a low-cost version. • With Sinclair Research, manufacturer of the phenomenally successful £70 ZX-81 has his inexhaustible capacity microcomputer. The two com-panies will develop jointly a sophisticated low-cost voice and data terminal, to be attached to the Mitel BPX, which will incor- Asia. porate a flat display screen using Sinclair technology. The screen will measure about 12 inches across but only one inch deep. With RAIR, a small British

personal computer already being

produced by RAIR, which is ex-

pected to sell for less than

£200m loan ICL's financial position, though still precarious, looks better than it has done for some

time. The Government recently agreed to extend its £200m loan

guarantee, which was originally

for two years, to five years,

to be filled in ICL's product cipal questions remain to be line is word processors. It has answered. The first is how been discussing possible colla-boration with several comwork through into new business panies, including Logica, a and profits. ICL has already leading British computer launched several interesting systems house. Logica designed new products, mainly at the a well-regarded word processor lower end of the market, but for Nexos, the National Entermost of its collaborative ventures will not start to bear fruit prise Board's beleagured subsidiary which was set up three before next year. years ago to market advanced The second question is how office equipment.

effectively the company will be Most in the industry agree able to manage its diversification into new areas. Success will require not only the masthat the new strategy is well-conceived and have been astorished by the speed at which its main elements have tery of advanced, and in some cases not yet fully proven techbeen brought together. The clarity of Mr Wilmot's thinking has won widespread respect, as nology, but also of a variety of different marketing techniques. ICL's board has been reshuffled, and fresh talent injected. But carrying the strategy through will also probably require further strengthening for hard work. Characteristically, he spent most of his Christmas break on a selling mission to the Middle East and of middle management in key areas. It is to Mr Wilmot's credit that he has almost singlehandedly effected a major shift in ICL's direction.

Putting in place a cadre of executives who will maintain the momentum which he has created may turn out in the longer term to be an equally important achievement.

Guy de Jonquieres

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COMPUTERS WITH A FUTURE

CARRYNGTHE

There's a popular misconception that the British computer industry is suffering the same fate as our car industry: in danger of being overwhelmed by big American and Japanese corporations.

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Teleputer

ONE of Britain's most successful computer manufacturers is Rediffusion Computers, which last year launched its "System Alpha." Mr Mike Aldrich, left, the company's director, is seen at home with one of his "tele-puter" terminals, which has been described as a " revolutionary range" of videotest devices that Rediffusion believes will also be at the centre of the home information system of the later 1980s.

The teleputer terminals combine broadcast television, video cassette recorder, video disk and telecommunications technologies with personal computing:

Significant developments in Britain. Alan Cane reports.

sudden increase in UK micro manufacturing

together with a leavening of with a large, built-in liquid small computer makers, none of crystal display screen and a them very successful, ali of resident Basic interpreter." them with precarious finances.

Much of that has changed. ICL has been forced to accept a humbler attitude to the world outside and some of those small manufacturers are looking like winners in their own right.

But the major change has been the sudden surge of British microcomputer manu-facturers. Once UK electronics specialists got to grips with microprocessors, they showed a talent equal to that of any country in applying them.

One example of the imaginative use of microprocessor chips is the Husky 144, a port-able computer launched only weeks ago by DVW Micro-electronics of Coventry.

The Husky is meant to be used in tough conditions; its specification would not disgrace a computer built to military standards. According to Mr David Viewing DVW managing director: "It is housed in

writing an article of this kind aluminium case that is imputer industry was ICL. ahuse It is not alumined to moisture, dust and together with the state of the st

The computer is already generating interest from construction companies, surveyors and the Eke. It could prove worthwhile competition for the very sophisticated dedicated calculators of the kind made by Hewlett Packard.

Mr Clive Sinclair moved from pocket calculators (and watches and pocket televisions) to small, if not pocket-sized, computers. His ZX80, and its successor the ZX81, shows innovation unmatched by any U.S. home computer company and quality sufficient for the machines to be

marketed in Japan by the Mitsui trading corporation. The Sinclair machines are distinguished by two features; a version of the Basic computer language ingeniously contracted so that it works on such a small machine; and a technique for cramming all the supporting circuitry for the microprocessor on to four chips, so cutting material and fabrication costs.

If the Sinclair machines, now being built at an estimated 500,000 a year, have kindled the spark, the BBC is hoping to fan the flames of popular computing with its instructional series, due

to start next month. The BBC computer has been designed by ACORN, whose managing director Mr Chris Curry pioneered low price microcomputing in this country four years ago with a single board, minimum specification device called the Science of Cambridge Mark 14. Priced at less than £40, users built it themselves with all the fun of finding the wrong parts in the hittle plastic bags Science sent out. Thousands were sold.

The BBC machine looks very good value for money. Ironically enough, production is delayed because of problems with the very chips—uncommitted logic arrays from Ferranti—which spelled success for the ZX81. At the top end of the microcomputer spectrum, there are a small number of UK manufac-

systems for professionals.

It is significant that when Mr Wilmot, ICL's new managing director, was looking for sultable small systems to market, he should look first to the U.S., for the high quality graphics provided by a micro-computer from Three Rivers Corporation, and then to the UK for a machine called the Black Box built by RAIR.

turers developing high quality

The RAIR microcomputer has a high reputation among programmers as an easy-to-use machine and is regarded as an excellent choice as a business

Research Machines of Oxford

educational microcomputer in many London schools.

These companies, and a host of others including LSI Com-puters and Trivector Systems, are proving that the UK can hold its own at least in the design microcomputer

The distributors are perhaps best exemplified by Comart, a Cambridgeshire-based microcomputer manufacturer and dis-

It is typical of a number of UK companies who have taken the best of the U.S. microcomputers and made a success of applying them to the UK market. Comart specialises in Cromemoo machines, one of the best regarded U.S. business

What of that clutch of mini-computer companies? The major success story is SYSTIME, a Leeds-based com-pany which has grown from being a Digital Equipment OEM (a company which incorporates the guts of another company's products in its systems) to something approaching in-

dependence Gow, formerly a DEC (UK) salesman, who made the critical observation that DEC was building the best minicomputers in the world but failing to exploit their potential in the commercial world. (Minicomputers were, in the beginning, the brain children of engineers and scientists. A whole raft of U.S. minicomputer companies grew rapidly in the 1970s then stumbled as their engineer-managers failed to come to terms with the realities of business. DEC came through

unscathed) Systime started by developing commercial applications software to run on DEC computers, then moved into the business of building its own computers based on DEC chips.

Mr Gow also realised that one part of the future for business computing lay in terminals and stand alone devices for use in shops and other places of busis. It has now developed a line in modular terminals based around Intel microprocessor chips and has launched its own 16-bit microprocessor. Systime's success is based on

a shrewd appreciation of market needs, quality systems implementation and good mainten-

It reward will be a turnover this year in excess of £30m, after early days in which its finances were so precarious that it needed a heavy cash injection from the old National Enterprise Board (now merged into the British Technology Group).

has frequently seemed ambuild a machine called the biguous in its approach to the sun.

in education and research. In and the machines have never fact, the 380Z is the standard had the popular success their They were the original machines chosen for developing Prestel and have been replaced now by other manufacturers' computers

in a number of systems. Ferranti builds the Argus range chiefly for control and military use. The compilers available with the Argus machines are Fortran which compiles the most popular scientific processing language and Coral, which compiles the Ministry of Defence real time language. Good steady sellers, these machines, but little known in the business world.

Modular One

Computer Technology was started by a group of ex-Elliott Automation employees including the remarkable larm Barron, now director of strategy for Immos, the state-backed chipmaking venture. Mr Barron designed a computer, the Modular One which proved first class for scientific work and which is still the basis of the company's 8000 series machines

After years of sound but lacklustre performance, chiefly due to scientific rather than commercial leanings, the company became part of the Information Technology group three years

Digico is another UK mini-computer maker which has traditionally looked for markets in research, medicine and education. It is also one of the few UK computer makers to supply computing hardware on an OEM basis to other manufacturers - the list includes Hill, Price Davidson, AlM and

Last year it announced a method of linking four of its Prince microcomputer systems to 23m bytes of disc storage; it has developed systems for linking its minis and micros to

mainframes ABS Computers, a small but fast-growing manufacturer which is now part of the Trafalgar House group, looks ready to make more impact on the market. It is very much a user orientated company with a special line in easy to use soft.

But one of the UK's most successful computer manufac-turers is Rediffusion Computers which last year launched its "System Alpha"—which Mr Mike Aldrich its managing director calls a "teleputer"—an all-purpose business tool. If has all the facilities of a computer terminal, viewdata colour felevision, interactive video system and personal computer.

GEC, the UK's major electronic company, makes a line of well-engineered minicomputers, the 4000 series, but the company ICL's troubles is that it gives these companies a place in the

THIS YEAR'S WHICH COMPUTE RT' SHOW

30,000 visitors expected

THE WHICH Computer Show, which opens tomorrow at the National Exhibition Centre, near Birmingham, is expecting to attract around 30,000 business executives looking for word processing and computing equipment, software applications packages, con-sultancy, bureau and ancillary services.

The event, being held in Hali Four at the NEC from January 19 to 22, has been expanded by 60 per cent compared to last year's show. More than 75 per cent of this year's space has been re-booked by exhibitors at the

Among more than 220 exhibitors are such leading com-panies as IBM, Rank Kerex and ICL, plus the newer household names such as Tandy, Apple and Commo-

Research among the 1980 show's 24,000 visitors re-yealed that nearly half the audiences came from small establishments employing under 100 employees and that 38 per cent of visitors were: directors or consultants. Nearly 40 per cent expected to purchase within the next

year, and 78 per cent influ-

Two new leadures of the show are contributed by two leading professional bodies. The National Computing Centre is managing a consultancy and information service to help visitors size their requirements, while the Con-M, while the Comregulariementa, warman production's Association's CSA City will house come panies providing software and bureau facilities. This new emphasis on software red the changing costs of comput-ing in which software now bends to form the major sie



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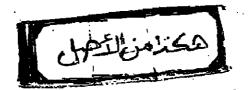
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Guy de Jonquieres asks Robb Wilmot, managing director of Britain's biggest computer group, about his new strategy

Why ICL's deal had to be with Fujitsu

G. de J.- ICL has staked its future as a mainfrime com-puter supplier on its collaboraion with Folian of Japan. Did you ever consider a similar arrangement with a European of a U.S. company? R.W.: The collaboration with Fujitsu gives us access to their very large scale integrated cir-cuit chips, primarily those that are intended for use in maincuit chips, primarily those that chip technology? are intended for use in main-frames, ICL is the only major arrangement. However, it is a developer of mainframes in very different market place, Europe, and none of the chip suppliers in Europe is actively ability to penetrate itself. We developing chips uniquely for are talking of data processing maintranes. So, really, it is not centres five to 10 times larger maintragues. So, really, it is not centres five to 10 times larger practical to seek a collaboration that the largest ICL installain Europe because the tech-

nology does not exist. Fujitsu have achieved very of the J.: What about standing performance levels. G. de J.: What about collaboration with U.S.

R.W.: It's very difficult. The key thing that we want is chip technology. We are not ceasing to design and develop mainframes. It is my view that



6 The key thing that we want is chip technology 9

Fujitsu has very much superior chip technology than any of the American companies who are also in the mainframe business. G de J.: Some commen-

tators have suggested that Fujitsu may simply use ICL as a stepping stone to give it a head start in an inevitable Japanese assault on European computer markets. How do you plan to safeguard against

that people have, but let me and telecommunications merge, resterate that the collaboration I think you will see that stanwith Fujitsu is for use of their dards take on a very much more chips. ICL has always bought in significant role than in the past. chips. Our collaboration with Most large organisations are Funish simply accelerates the only just beginning to implepoint in time at which we gain ment networks of computers, access to a new chip technology meaning that machines have to compared to a normal commer, be able to talk to each other.

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cial user. It therefore allows our own developers to produce or two, I think that there will state of the art computers eartier than they otherwise would. that standardisation of network-This strengthens, not weakens, ing standards is going to be a

G. de J.: Did Fujitsu insist that you market their very large computers in exchange for giving you access to their

tions. It is a market where Fujitsu have achieved very out-

G. de-J.: The European computer market has been dominated for years by American companies. What are the prospects for European companies reversing

R.W : I think that in the smaller computer area where a lot of the growth is-minicomputers, microcomputers, office systems and telecommunications products-we have already seen a much more significant penetration by the European manufacturers than has historically

been the case in mainframes. You have only got to look at manufacturers like Olivetti and Nixdorf to see very virile companies in the small systems market that are not only performing well in Europe but are performing well in the U.S. and

many other countries. G. de J.: ICL's recovery strategy includes no collaborative links with any other European companies outside Britain. Why is that? Do you see any realistic prospects for cross-frontier collaboration between European companies in the future? R.W.: We already have fairly

extensive relationships with other European computer companies through the various standards organisations. As we move into the era when comput-R.W.: I know this is a concern ing and data communications

be a growing understanding crucial issue.

G. de J.: There may be on technical agreements standards, but regulations imposed by different countries, particularly by national telecommunications authorities, still differ widely. Will that not pose an obstacle to the growth of the networked computer systems which you envisage in the future?



6 We need major investment in computerisation of data bases 9

munications and computing technology converging into information technology, I think there is a strong probability that you will see the telecom standard-setting and computer standard-setting bodies coming very much closer together in the coming year and even merging over the relevant standards. That does not mean that there won't be political overtones and genuine concerns about the free ownership and transmission of data. But I think that these will tend to get resolved because the ability to communicate freely think, going to take on a very

G. de J.: Do you see collaboration with other European companies remaining essentially in the field of technical standards, or could it develop into closer industrial operation?

high profile.

be the basis. There are potenrelationships where one com- Government's business is largely

skills and develop it for both parties, and the other company could do similar work in a different area.

My own view is that this is likely to build up around information technology products, particularly office products, where no one European computer company has got the com-plete spectrum of skills.

At the end of the day I think you have got to be pragmatic and accept that each of the major European countries wants a viable and vital computer industry of its own. Whatever co-operation may emerge in Europe, I don't think you will ever eliminate the desire by the French for a French computer industry. Same thing in Italy. same thing in Germany, same thing in the UK. Which isn't bad. I think one has to accept that that's life and not attempt assumes that one can somehow overcome it.

Therefore, you have got to find lower-level relationships which are pragmatic in their nature. The Airbus is a good example. Bits and pieces of it were built all over the place, but it was not a Concorde. It R.W.: Well, of course, the worked, whereas the grand plan immediate growth is within has not yet been shown to work national boundaries. With com—ever.

G. de J.: The previous management of ICL complained loudly that the company suffered because foreign Governments gave more support to their national computer 'industries than ICL received. Is that still true? R.W.: Yes, it is.

G. de J.: How much of a

handicap is it? R.W.: I think that any Government support is a mixed blessing. We do not go around with our begging bowl. Our job is to take the money that we spendwhich is significant, as we within the Common Market is, I spend £75m a year on research and development—and spend it more wisely and effectively. We have a lot of work to do in that area, as well as lobbying for more enlightened procurement.

It is our feeling that rather than subsidies for development, it would be far more effective to see a higher level of invest-R.W.: I think standards will ment by Government in information technology. At the end of areas for commercial the day, the nature of the

As we move into the next year pany could take a particular administrative, Information tech- benefit. I don't mind. The product where it has unique nology can improve the productivity of the administrative

> G. de J.: What do you mean by enlightened procurement? R.W.: One of the problems with the way that cash limits are applied in this country is that it is very easy to cut back on capital investment, which is the seedcorn of productivity improvement and improved services in the future. I think that this has happened in many Government departments. What we would like to see is the information technology capital budget separated from the rest

eash limits. G. de J.: What sort of projects would you like to see the money channelled into?



One has just got to take a very aggressive approach 3.

R.W.: We would like to see major investments in the computerisation of data bases. In many sectors of Government data are still held on card filing systems. The rest of the world has moved through one generation of computers and is now moving into the second genera-tion of data bases, which are very sophisticated electronic filing systems.

G. de J.: Since the GATT and EEC rules on central governcomputer procuremeent were changed at the start of this year to end preferential procurement policies, there would be on guarantee that ICL would win these contracts.

R.W.: That's right, G. de J.: So the meaures which you are advocating could turn out to benefit IBM,

R.W.: As long as we all

Government is a very large part of the total economy. If it is formation technology for its own use, it must be a depressent on the whole industry. I don't think we are suggesting that enlightened procurement means just buying ICL computers. It means a very much higher level of investment in all potential

G. de J.: What order of investment would be appro-

priate? R.W.: The way we try to measure it is to look at the total number of video terminals in use as a percentage of the total workforce. In the UK, we have a level of about one-third of that

Let's say we wanted to triple the number of terminals to bring us up to the same level as the U.S. That would mean putting in four or five million terminals at £1,000 each-£4bn in total. That's just for the terminals, and each of those would have to be backed up by an equivalent amount of computer power, or more. That is total, for both private sector and government sector. So if you halve it, the investment for government is probably £4bn or £5bn.

You can't do that quickly, and the worst thing you can do is to try to catch up four years in six months because you will fall all over the place. But certainly a phased plan of two to three years to catch up and intercept the U.S. could produce very meaningful results because the savings can be tremendous.

Look at the way a lot of the Government's administration is run. National Savings is still uncomputerised, the Health Service is and hospital administration is all manual. regional administration in hospitals is computerised but it is not on line. All the records have to be sent off on bits of paper and entered on key punches.

Look at the Post Office. . look at a Post Office' counter, what do you see? Weighing Go to Japan, for example, and the whole thing is on electronic on-line banking. Instant withdrawal, instant naving-in. Electronic monitoring of the passbooks, mechanical printing, magnetic coding of



Robb Wilmot: superior chip technology led ICL to Fujitsu

One has just got to take a first job is to correct that and very aggresive approach. It is trade profitably. We're close a malaise of British industry to doing that now. The second that capital is considered something to be saved, not spent. I take the exact opposite view, that capital is something you

want to find ways to spend. G. de J.: You have said that you intend to turn ICL into a genuine multinational. What is your strategy for in the U.S. and

at a loss in the past, and our thinking about Japan yet.

major thrust will be on the basis of a new micro which we will start producing early next year. From what I've seen in the U.S., it will get very wide acceptance.

We're also hoping to take our Distributed Mainframe, which is scheduled for late 1984, into the States in a big way, probably through American systems and software houses. R.W.: In the U.S. we've traded haven't really got around to

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The North Sea offshore oil industry is now a major user of computers. Ferranti Argus

computer control has been

chosen for use in the Forties.

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pipeline, the BP Rotterdam refinery and the Shell BP oil

and gas production installa-tions in Nigeria.

The British Steel Corporation

has ordered process monitor-ing systems for the Queen Anne blast furnace at Scun-

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cities. An automated check-in service using Argus com-

puters is working at Hong Kong and Manchester Air-

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BUSINESS

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The computer activities of Ferranti date from 26th October 1948, when the first order for a UK-built com-

puter was placed. In recent times Ferranti Computer

Systems Ltd has put most emphasis on real-time on-line

systems for civil and defence applications taking respon-sibility for system design, manufacturing, programming

'New technology'

The Ferranti CS7 computer-

assisted composing system is now well established. Users include the Printing Indus-

tries Research Association, the Observer newspaper,

Odhams and Her Majesty's

Stationery Office (for the production of Hansard).

Ferranti Computer Assisted Command System (CACS) will be fitted in a variety of

naval ships during the 1980s.

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Switching Systems from

Ferranti are in use in three

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Ferranti computerised com-

mand and control systems

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source mobilisation system with the Greater Manchester Fire Brigade (the first of its

Meteorological Office.

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Terry Dodsworth looks at Mitterrand's plans to reduce U.S. control of the industry in France

Saint Gobain rides to the rescue

THE ARRIVAL of a Socialist Government in France is bringing with it yet another re-

organisation of the computer industry.

The restructuring of Cii Honeywell Bull, the only nationally-owned large mainframe computer manufacturer, is partly due to the Socialists doctrine that strategic industries should be brought into State hands. But it also derives from the attempts of a newcomer to the industry, Saint Gobain, to pull Cii out of a recurrence of its financial difficulties.

Efforts to create an independent and internationally competitive French computer group go back about 20 years. At that time, General de Gaulle was stung into setting up the embryo of the modern-day Cii when the Americans refused to sell his Government a large computer necessary for work on the nuclear defence programme.

Despite hefty subsidies, however, Cii never managed to establish itself fully. In 1976, it was merged with the American-owned Honeywell Bull in a deal which gave Honeywell a 47 per cent stake in the French

What the new Government is now trying to do is to annul. or at least reduce, this reversion

Because Cii is heavily depend-ent on American technology, the most likely result of the talks now going on is a trimming back in Honeywell's stake to about 20 per cent in what will then be a nationalised concern. The negotiations with the U.S. group, however, have also coincided with profound changes in the management which would in any case have altered Cii to some extent.

Objectives

These changes derive from the acquisition of the French shares in Cii by Saint Gobain, the big glass-making and steel the big glass-making and steel which is also indicated that Cii is seen as one building block in Civetti work.

It also indicated that Cii is seen as one building block in Civetti work.

All of this reorganisation is being done, as 20 years ago, in the servicture, dedicated essential control of TBM, which the Socialist victory in the elections last summer and was largely inspired by its need to diversify out of relatively stag- and eventually led to the forced nant manufacturing sectors. But it has immediately shown itself to be a more vigorous partner in Cil than CGE, the previous owner of the French shares, which had steadily lost interest in further investment in the computer industry.

Saint Gobain's objectives clearly coincide with many of those of the new Government. The glass-making group has, for the past two years, been in the of constructing a widely based high-technology division through a series of takeovers and participation deals. It has established a microchip company in a joint venture with National Semiconductor of the U.S., moved in on Cii, and also taken a 30 per cent stake in Olivetti, the Italian type-writer and office equipment group,

More recently, in collabora-tion with Olivetti France, Saint Gobain gained control of Logabax, one of the larger French mini-computer manufacturers, which ran into deep financial

thorpe and the basic oxygen steelmaking plant at Lackenby. Orders for the electricity supply industry include computers and dis-

plays for the CEGB's North East and South West regional

grid control centres and a monitoring system for Fiddler's Ferry power station.

From Germany important orders include the control

system for an ethylene plant being built by Linde in Por-

tugal and seven Argus systems for Brigitta and

Elverath, a company owned jointly by Deutsche Shell AG and Esso AG.

are to serve smaller cities and large towns such as Preston

London's Underground is also

using Ferranti computers. The system installed at

Leicester Square for the

London Transport Executive handles the monitoring and

switching of power supplied to the Central Line. Eight

computer-based data com-

munication systems for rail-

way signalling control have

been delivered to the LTE

who are also evaluating a

Ferranti system for the northern end of the Picca-

and Huddersfield.

THE TOP 25 COMPUTER COMPANIES OPERATING IN EUROPE

Data processing (DP) revenues in \$m for year 1980. This table does not include Philips, for which figures are not available.

; Ran : 198	k; 0 Company	Parent company HQ	European DP rev.	% change European DP rev. 1979-80	DP rev. domestic (parent company)	DP rev. worldwide	Total rev. Europe	Total rev. worldwide		Total net income worldwide	income worldwide 1979-80	Total employees, worldwide	Year ending
, 1	IBM ·	U.S.	9,902+	+12	12,426	26,213	9,902	26,213	+15	3,562	+ 18	341,279	Dec Sept
2	Siemens	W. Germany	1,505	+10	1,204	2,040	12,921	17,978	+14	356	- 7	344,000	Pec
3	Cii-Honeywell Bull	France	1,444	+23	789	1,489	1,489	1,489	+23	43		20,267	Sept
. 4	ICL	UK ·	1,300	+13	665	1,494	1,271	1,494	+15	37	+ 50	32,582	Dec
- 5	Olivetti	Italy	876	+23	479	1,221	1,847	2,545	+18	58	+ 52	53,339	·
6	Sperry Univac	U.S.	825	+13	1,596	2,800	1,600	5,000	+15	*		87,500	Mar
7	NCR	U.S.	810	+27	1,428	2,525	1,064	3,322	+11	255	+ 9	. 68,000	Dec
8	Digital Equipment	U.S.	786	+39	1.928	2,368	678	2,368	+31	409‡	+ 39	55,000	June
9	Control Data	U.S.	764	+34	2,206	2,791	764	3,809	+18	148	+ 25	57,068	Dec.
10	Burroughs	U.S.	734	+14	1,635	2,902	· 734	2,902	+ 4	82 ,		55,000	
11	Nixdorf Computer	W. Germany	707†	+23	410	855	707	855	+25	42	6	13,659	Dec.
12	Hewlett-Packard	U.S.	593	+54	742	1,546	1,054	3,099	+31	269	+ 33	57,000	Dec
13	Thomson-CSF	France	497	+17			<u> </u>	3,855	•		*	8,160	
14	CIT Alcatel	France	493	+18	345	518	775	. 1,802	•	68		40,000	. Bec
15	Honeywell Information System	s U.S.	491	+29	1,226	1,634	985	4,925	+17	294	+ 13	29,090	Dec
16	Plessey§	UK	289	+18	154	268	1,286	1,626	+16	89	+ 28	44,499	Mar
17	Datasaab§	Sweden	276	+36	99	276	276	276	+36	•		3,354	Dec
18	Rank Xerox§	U.S.	254	÷50	482	845	2,464	8,197	+17	619	+ 10	120,480	Dec
19	Kienzle	W. Germany	232	+17	143	216	400	400	+18	11	+ 22	8,300	Mar
. 20	Ferranti	UK	218	+47	122	201	380	468	+12	22	+ 12	17,270	April
21	Memorex§	U.S.	175	- 7	415	501	268	769	+ 4	-29	-192	11,000	Dec
22	Data General	U.S.	171	+56	488	654	166	. 654	+29	55	+ 10	14,370	Sept
23		France	156	+14	133	168	156	168	+15	4	- 20	2,150	Dec
24	ITT	U.S.	155	+24	260	•	•	21,996¶	+131	381¶	— 42 ¶	348,000	Dec
25	Amdahl	U.S.	152	+23	243	394	152	394	+23	15	- 1	4,021	Dec

* Not available. † Figures include word processing. ‡ Profit before tax, not net income. § Estimates. ¶ 1979 results.

Source: Datamation/Logica

tially to big computer produc-being done, as 20 years ago, in tion: a rival plan by Cii itself the shadow of IBM, which to move in on Logabax was remains the dominant force in quashed by its parent company, the French market. The Ameriresignation of M Jean-Pierre Brule, its managing director.

Gobain and the new Government, however, have yet to prove that they can give France for large and small machines. a viable computer industry. Cii. This is about twice as much as having gobbled up subsidies of FFr 1.2bn since 1976, and pite the fact that the French making a slight FFr 160m prost of Group has guaranteed Government sales. in 1980, is expected to lose ment sales. between FFr 300m and IBM, in p FFr 400m for the 1981 financial

tiations are successfuly con-cluded, it will remain strongly

stitute. At the same time, Saint set Logabax on its feet again, in this category.

can group, which has manufacturing plants in France (ironically, it has lower imports from These manoeuvrings by Saint the U.S. than Cii), is reckoned to have captured about 33 per cent of the total French market

trouble in 1980. This acquisition proportion of Cii's sales is of in the middle range sector, clearly illustrated Saint American-made computers for where Cii is at its strongest on Gobain's intentions of establish which it has no immediate sub- about 37 per cent, IBM leads with 40 per cent of sales. ICL with a range of activities that Gobain has to show that it can of the UK has about 3 per cent

French manufacturers have

been hardly more successful in ensuring that the country's independence is in most other sectors of the market. The small computer and peripherals industry, for example, has been While other French manu-facturers, such as CIT-Alcatel, Sagem and Electronique Marcel Dassault are now developing quickly—partly as a result of

a FFr 660m Government-backed aid plan-foreign competition remains fierce: Olivetti, for example, has a prominent position in this sector.

n 1980, is expected to lose ment sales.

Setween FFr 300m and IBM, in particular, dominates The strong point of the big mainframe market. French industry is in software, which accounts for the largest where France has created some element in the industry's sales. Its 70 per cent stake competely panies, such as Cap-Gemini-luded, it will remain strongly dwarfs the position of its main Sogetl and GSI, a subsidiary of the position of the subsidiary of the competence of the leading European computed in the CGE electrical group But dependent on the American rivals, another three American the CGE electrical group. But group for at least half of its producers—Univac. Control much of the current expansion technology, since a significant Data and Burroughs. But even of the big French groups in this

field now seems to be going into the field of automated office equipment, where the application of computer-based systems presents big oppor- roughs, Triumph-Adler, Philips tunities for growth.

This part of the market in France is reckoned to be underdeveloped compared with other in an attempt both to expand industrialised countries such as its product line and develop its the U.S. or West Germany. It is also under-supplied by French manufacturers, who. hit by the collapse of Logabax, have allowed importers to While other French manucapture at least 50 per cent of facturers, such as CIT-Alcatel, sales without building up compensating exports: the trade deficit was calculated a year ago at about FFr 3bn, and could grow further because of the rapid 20 per cent to 40 per

cent expansion in the domesic

More aid

enorts to try to ordinate a response to this designed to give France a weakness in the industry by subsidiary, is in particular said are concluded, and the new to have benefited from these organisation of the company schemes. But the two most settled into place after national important developments have lisation, it will not be clear

dimension to face up to the challenge that is coming from multinationals like Xerox, and so on.

CIT, for example, has taken over Roneo Vickers of the UK international sales network. Saint Gobain's link with Onvetti was conceived in a similar manner as a means of building bridges between the group's affiliate and the office equip ment applications in Offvetti.

Thus, in both the established mainframe computer sector and the fast-developing office equip-ment applications, Saint Gobala holds many of the most im-portant cards for the future of the French industry.

Its sudden move into this The past French Government high technology sector has been strong position at home and the pumping in aid tied to specific base for healthy exports. But contracts. CIT-Alcatel, the CGE until the talks with Honeywell been the attempts by two of the exactly how the company in-

Stewart Fleming analyses recent upheavals

Germany sees growth in data processing

pany was facing heavy losses

workforce by a third and in-

volve the closure of its second

largest German plant, the Adler works in Frankfurt.

In the event the company was

Germany began to run out of respond to the pace of change steam last year as the weakness in the market place. in the economy finally began to make itself felt in decisions by companies to cut back or post-pone capital spending. has created was provided by

In the past the data processing industry in Germany has been able to buck the overall economic trend and has been lavished an estimated DM lbn accustomed to steady double on the acquisition of Triumph-digit growth rates. But after a Adler, beginning in 1979, a strong first quarter with sales up around one fifth, the second seen as opening up a new and third quarter performance growth market for the motor was flat, and industry fore group. casters were concluding that for the year as a whole the DM 40bn (£9.3bn) a year data processing industry would show little or no growth overall, even though individual sectors were

The main factor behind the weakening demand was the performance of the economy. In 1980 capital investment in German industry had held up well as economic growth slowed. But in 1981 as companies began to suffer what, according to the Bundesbank, the West German central bank, has been the worst slump in corporate profits in the post-war period, companies began to cut back investment spending. Surging interest rates, which hit record levels during the course of the year and made long-term finance either unavailable or prohibitively expensive, were another factor in decisions to trim investment spending. Above all medium-sized companies, which have been a strong market for data processing equipment, have Adler, has recognised that it, been particularly hard hit.

The industry's problems in for phasing out products which the past year have not been advancing technology has made the result only of weakening obsolete. demand, however. Aggressive price competition, above all computer company with a 20 International Business per cent market share, has also Machines which dominates the felt the need to shake up the market with an estimated 55 per management, and structure of cent share, has added to the its data processing operations. pressures on profitability. What has also become clear, however, main board member responsible over the past 12 months is that for its data processing operasome of West Germany's leaders tions had to step aside and in the data processing and the small business computer

THE BOOM in sales of data office equipment sectors of the segment of its data processing processing equipment in West industry have been slow to operation was split between the communications division and the power engineering division.

The changes led to specula-Perhaps the most dramatic example of the problems this tion that Siemens might be cutting back its computer opera-tions, something which Siemens the grim news from Triumphhas roundly denied. On the contrary the company has pointed out that its research Adler, the office equipment sub-sidiary of motor manufacturer Volkswagen. Volkswagen and development spending in the computer business is cur-rently running at DM500m a year, and the company sees diversification move which was itself as being very firmly placed to carve out a strong position in the market for equipment for the offices of the Heavy losses

It is this sector of the data processing market which is expected to be the fastest grow-In early September, however, came the news that the coming in coming years, and Siefor the year and was examining a drastic re-organisation promens is not alone in its efforts to prepare to take advantage of the opportunities presented gramme which would cut its by the convergence of tele-communications and data pro-

cessing technology.

industry's largest groups, CIT-Alcatel and Saint Gobian, to state owners. MPL Computer Power / Systems SILENCED 50Hz 60Hz & 400Hz FREQUENCY CONVERTERS NO-BREAK UNINTERRUPTIBLE **POWER SYSTEMS**

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forced by union and political pressure to trim back its reorganisation plans, but the message was that the company now considered significant

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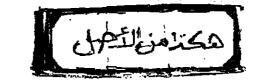
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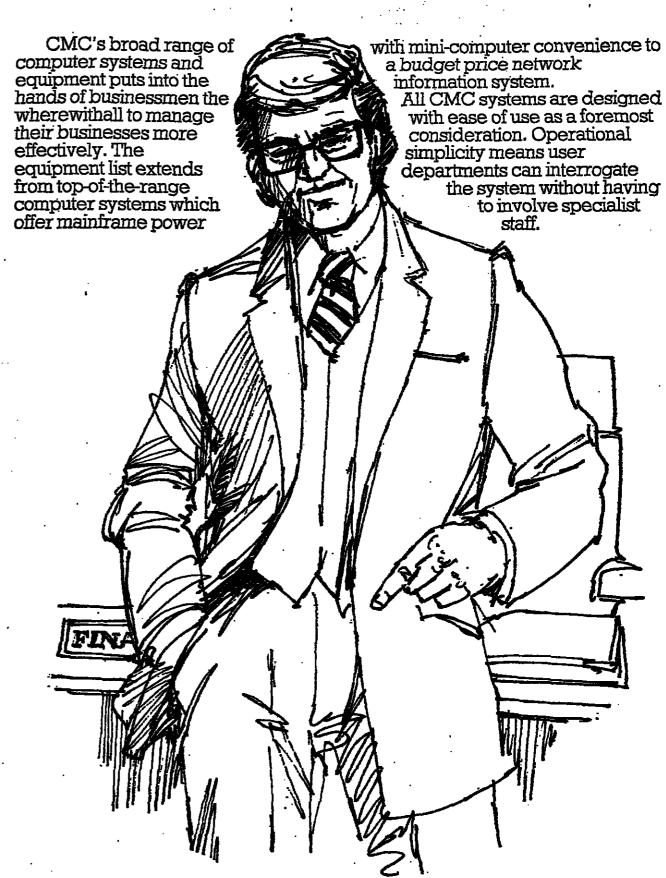
Tel. (01) 472599 Telex 32639 Wescan Europe Limited
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parts of its product line to have been overtaken by technologi-cal change, and that too many of its products were still concentrated in the electro mechanical equipment market, Olympia Werke, the AEG-Telefunken subsidiary is another former typwriter manufacturer which, like Triumphtoo, must accelerate its plans Siemens, the leading German Thus earlier last year the

at Nottingham, Coventry, Car-diff, Leeds and Manchester. dilly Line. The good news is Selling technology



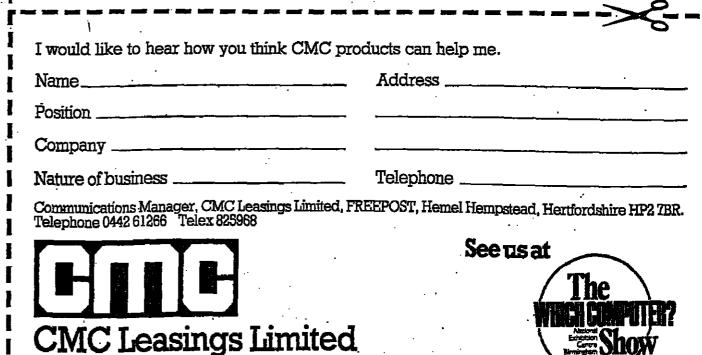
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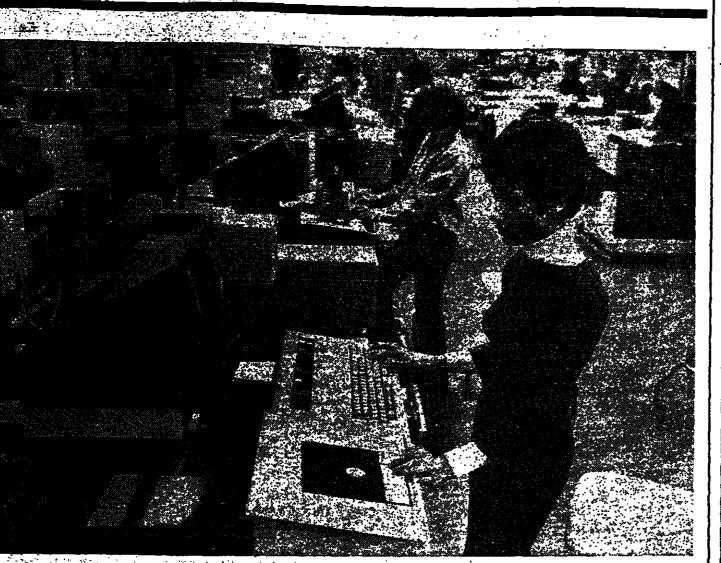
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Computer systems undergoing final tests at Olivetti's Scarmagno plant, near Turin. In Europe, Olivetti has a strong market position, particularly in Britain, West Germany, the Benelux countries, as well as Italy.

Outside Europe, Olivetti is winning good sales in Latin America, the Far East and Australia

James Buxton examines operations by Olivetti and IBM Italy

Italy is European leader in use of small and large models

ndustry: Olivetti, the biggest producer of information processing equipment and office pro- desk-top equipment thus bridg-ducts, and IBM Italy, which has ing the gap between its office country's most profitable com-

effects the dominance of the terminals for large computers we computers by European —for use in banks, etc., and rtion of small computers in operation, and the highest terminals. By 1975-76 it was proportion of large ones, while producing an electronic ver-Olivetti is almost exclusively in processing device, linked to a the field of small business computers and distributed data 1970s it strengthened its posiprocessing, while IBM concention in these fields so that it trates on large computers now produces a complete Colivetti's data processing business accounted for nearly 60 computers and of distributed per cent of its turnover in the first half of 1981.

wrate IBM Italy is a significant exporter, exporting about two—the difference is in the a third of its output. Olivetti is software. An example of distributional group only 35 builed data processing are per cent of whose sales are Olivetti's systems for use in made in Italy. It has been banks in which it has tradition-enjoying a period of fast-rising sales and improving profitability large order from the automation of a network of Danish savings Sig Carlo De Benedetti as third Sig Carlo De Benedetti as chief banks in 1980 and two for executive and a leading share holder Because it is involved in both office automation and information processing it is better placed than some of its savings banks, a client which rivals for the coming battle to Olivetti has been serving for produce electronic office equip-

Financial crisis

started to manufacture com-puters in the late 1950s. But in 1964 the combination of a finan-cial crisis for the company and well as Italy. Sales in Europe lack of Italian Government made up 70 per cent of total support for its computers—in group sales. Outside Europe, the form of substantial orders Olivetti has a strong position -forced it to withdraw from in Latin America (12 per cent

THERE ARE only two signifi- But it stayed in the field of sence in the Far East and cant companies in the Italian data processing and in 1965 pro- Australia (11 per cent). manufacturing duced the first scientific desk-top microcomuter. From then on

computers to make electronic It was also able to build on

was one of the first companies to produce electro-mechanical large computer. Throughout the

data processing devices.
In terms of hardware there While IBM Italy is a significial little difference between the 1981. Recently, at best Japanese competition to modernise the Nokyo network of Japanese Olivetti has been serving for about 75 per cent of Italian banks have Olivetti terminals.

In 1980, Olivetti's business Olivetti, which began as a made up 23 per cent of sales, typewriter manufacturer at and terminal and data entry Ivrea in Piedmont in 1908, systems a further 16 per cent.

of all sales) and a useful pre-

Its main disappointment has

company in Europe and the stit concentrated on using it has failed to make money sixth biggest in the world as a its experience in mainframe for most of the past 20 years. Olivetti's involvement there has been mainly in the form of writers. Tackling such a large market that is on the door step of the big U.S. information processing equipment makers has proved difficult. U.S. sales

> Now Olivetti is using a new approach to the U.S. market. In 1980 it took a stake in a manufactures automatic teller machines. Olivetti is now selling to the U.S. market through

An important reason for Olivetti's stake in Docutel, as well as that in Syntrex, a small U.S. company which makes word processors, is that they enable Olivetti quickly to gain new technological knowhow which it does not always have the capacity to produce itself. The whole business is changing so fast that the loss of a year's research and development work can be disastrous to a company's financial position.

New products

"I keep telling my colleagues: we have to earn our living every single day," says Sig Vittorio Levi, director of Olivetti's information processing and office automation division. Olivetti products are constantly being superseded by their more efficient, usually smaller successors, and its factories are in a constant process of change as new products are introduced and working methods changed.

In terms of sales growth, the company's biggest success at present is its range of electronic typewriters, which it was the first company to bring out. It is on this product more than any single other that the turnround in the company's fortunes under Sig de Benedetti has been based. L178bn.

the first half of 1980. The most sophisticated model can do text revision and other processing

The electronic typewriter does not come under the heading of the way in which Olivetti's products from the business systems to cash registers, are gradually converging into a electronic products with increas ingly similar components and functions. The next step will be the electronic office, almost munications devices.

Olivetti's involvement in both office equipment and computers gives it an advantage over some of the other European office equipment makers like Olympia. But as the hardware of the future becomes more similar it will face competition from companies from other fields like telecommunications which have not previously been involved in office automation. This is why Olivetti is anxious to expand further into telecommunica-

To complete its offerings in the range of computer products Olivetti returned in 1980 to selling mainframe computers under licence. The computers are made by Hitachi of Japan and by IPL, a U.S. company in which Olivetti has a 33 per cent stake. Last year Olivetti sold 51 machines, the majority of them in Italy and is now able to offer its clients a full range of compatible computerised equipment.

- But this is a small operation compared with the performance of IBM and the other U.S. and Japanese mainframe computer manufacturers. IBM Italy alone had sales in 1980 of L1,492bn (£648m), compared with the turnover of the whole Olivetti group (only 35 per cent of which was in Italy) of L1,102bn, on which it made a profit of L50bn. IBM Italy made net profits of

William Dullforce on growth in financial terminal systems

Nordic states mount a challenge

administrations, the four Nordic tronic debit systems at the retail market in which selling suc-

world producers politicians but On the manufacturing side, realised soon. the efforts of a few Nordic com-panies to build and market general purpose computers failed. New, however, with the expansion of office and factory automation and of personal combuting some Nordic concerns making smaller systems have tarted to grow fast. In one field, financial terminal

ystems, the Nordic market is articularly advanced. Helped y a tradition of co-operation and spurred by the need to curb osts in high-wage societies he Nordic banks have deveetworks of teller terminals, market. From January, L. hich they have steadily Datasaab will be incorporated pgraded.

AS ADVANCED technical societies with extended welfare the lead in introducing elecadministrations, the four Nordic tronic debut systems at the retail countries—Denmark, Finland, shop level, under which shop Norway and Sweden—have been customers pay for goods with a quick to adapt to the use of card which immediately debits computers. They offer a relatively small but sophisticated planned by the Danish banks has run into some hitches with cesses are prized by major the bank employees union and politicians but is expected to be

In the international context, one of the most interesting recent developments from the nordic area is the attempt by L. M. Ericsson, the Swedish telecommunications group, to exploit its know-how in computerised communications to carve out a share of the business systems market.

Ericsson has just acquired Datasaab; the loss-making Swedish computer and terminals producers which is the remnant of the Swedes' earlier efforts to break into the world computer

In the U.S., Ericsson has gone system to the American market and will be a springboard for entry into the office equipment

Shipments

Statistics on the Nordic computer markets are not easily compiled because of the varying definitions and demarcations used, but in 1980 Quantum Science Corporation assessed 1979 shipments of general pur-Nordic market at \$528m. It put sales of small business systems at dollars 194m and of terminals at \$220m.

Nordic countries about 4 per cent while small computer sales cent of the overall Western were going ahead at between European market for general 20 and 30 per cent a year.

Systems, which will operate purpose computers, 6.5 per cent four divisions. purpose computers, 6.5 per cent of small business systems (including personal computers), field, which will be offering Science Corp. foresaw a 23 per cent annual growth in sales system to the American Nordic area in the five-year period to 1984, compared with 13 per cent for general purpose computers and 12 per cent for

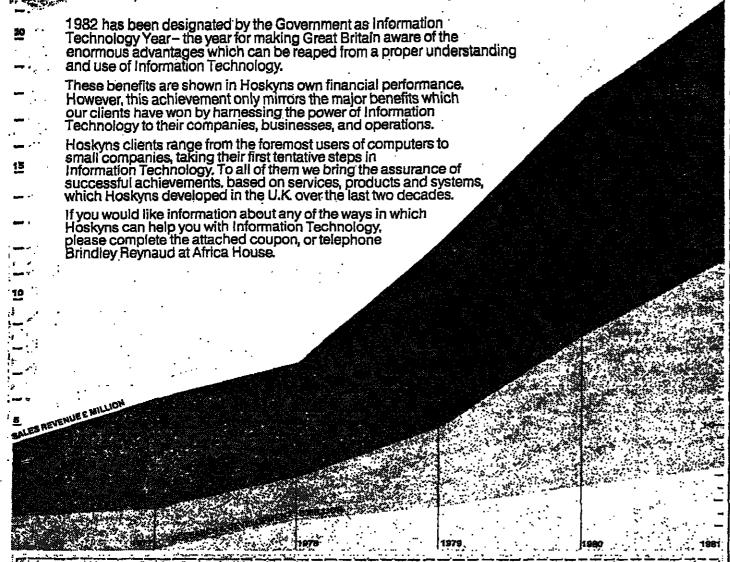
> Sweden accounted for over 40 per cent of the installed capacity in general purpose com-puters, for some 37 per cent of the small business systems and - about half the terminals.

The Swedish Office and Computer Equipment Suppliers pose computer systems to the Association recorted an increase of about 20 per cept in its members' sales during 1980. estimated that sales of general purpose computers were rising These figures would give the at an annual lever of 5-10 per

CONTINUED ON NEXT PAGE

Our clients make the real money





Nixdorf: the 85,000 Computer Network.

All over the world, Nixdorf is putting computer power in the hands of all kinds of people - people who need to originate data; people who need to process data; people who need up-to-date information rapidly. In fact, the concept of bringing computers to people right where they work was pioneered by Nixdorf.

As a result, large companies have gained the benefits of distributive processing; small businesses have gained the computer. What's more, Nixdorf's software technology has enabled people to communicate with their computers in simple terms. And Nixdorf computers are easy to use, speaking your language in 31 coun-

Nixdorf computers also "talk" to each other, and to other computer systems, so growing companies can have a problem-solving communications network to build on. Nixdorf combines the most advanced technology and application known-how with a long-proven record in engineering and manufacturing to produce computer systems unmatched throughout the world. Our customers find this blend of experi-

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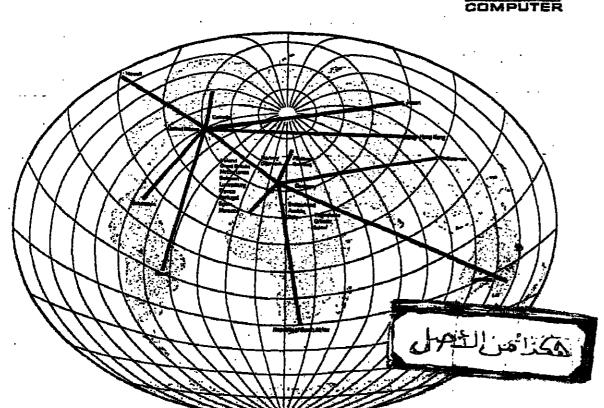
people in companies, small, medium and large; in manufacturing and distribution; in banks and insurance companies -

wherever computers can help. Our network of 85,000 computer installations - Distributed Data Processing Data Entry, Word Processing and General Susmess Computer Systems - is only the beginning. Join us. Anywhere you need a solution to your management problems, start by talking to Nixdorf.

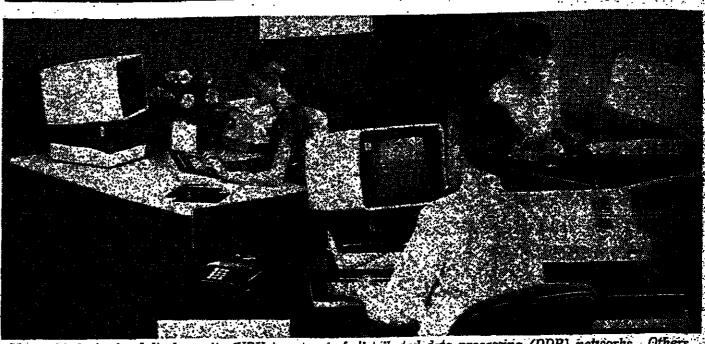
For further information Nixdorf Computer AG Furstenallee. 4790 Paderborn, W.-Germany Tel. 05251/2001,

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NIXDORF



COMPUTERS XIV



Many of today's visual display units (VDUs) are part of distributed data processing (DDP) networks. Others form stand-alone systems for business, industry and science, while many others are merely local tiput terminals for mainframe computers. Above: ICL's DRS 20 series of multi-microprocessor-based distributed

Geoffrey Charlish picks the winners in this thriving market

So many developments in the data handling field

environment, has to be acquired

done is crucial to the success of the whole computing operation, much effort has been put into ways and means. In the early days it was a application.

choice between punched cards, paper tape and the teletype-writer. They were all relatively slow and cumbersome compared with today's methods which include such devices as the visual display unit (VDU), the hand-held terminal with miniature keyboard and display (plus memory and intelligence), optical character and striped plastic cards, bar code reading and electronic data

logging.

The main workhorse is the VDU terminal, able to display both entry and output data and usually possessed of a good deal of intelligence. This allows it to process and manipulate data, in ways to suit the task at hand, before communicating either with other terminals of the same kind, or with a central computer.
Many VDU terminals today

are part of these distributed (צעע) works, others form stand-alone small systems for business, industry or science while many others are merely local input terminals for main frame com-

It is a considerable market. The sales of DDP terminals alone in Western Europe. according to IDC Europa, will be \$500m this year, predicted

to rise to \$2.8bn by 1986.

The VDU reigns supreme because it allows input information to be entered quickly, formatted, edited and otherwise manipulated in both alphanumeric and graphical forms— computer-aided design is an outstanding example of the latter.

Specialised examples now exist in many walks of life. For example, in the building society branch customers' deposits and withdrawals are entered and passbooks are automatically updated. In shops, point-of-sale terminals allow customers' purchases to be entered, receipts printed and accounts debited, and on the factory floor terminals keep a tally of production activity for later consolidation by a main computer. There are many other special applications.

puter can go about its business, duction by Burroughs, the data, generally from the human MT 1500, allows shop floor data input by most of the known methods—keyboard, Hollerith card, optical character recogni-tion (OCR), bar code reading accuracy with which this is wands and magnetic striped plastic cards. Driven by a microprocessor this wall-mounted unit, it is claimed, can be tailored to almost any industrial

> widely employed in their own right. The cheque for example, of OCR-millions are identified daily by the printed number along the bottom, comprehen-Hand printing can be read by several devices, while others can read whole printed pages for text entry applications. easier variant, optical mark recognition, can speed data input via pencil strokes made on simple, job-specific forms.

Commonplace

The magnetically striped card is now commonplace as a method of entering personal data into cash dispensers, building access terminals and telephone boxes (beginning to stripes are also of course, a universal means of coding credit and bankers cards uniquely.

A particular UK success in this area has been EMI's Watermark Magnetics encoding system, said to be totally secure. Cards also now exist with inte- into their own with the adventgrated circuits built in, allowing the card not only to be debited.

An even more astorishing example announced recently by SRI and Drexler Corporation in the U.S. uses laser engraving to put 40m bits of data on a credit are taken they are keyed into equivalent of a dozen or so novels to be put on the card. Alternatively, the owner's "mug-shot" could be digitally encoded; the card would be "played back" in a terminal whenever the owner had to be positively identified, perhaps to gain entry to

In modern large scale retailpoint of sale (POS)-such things as the manufacturer's meanings of the keys or some name and an exact product des- other aspect.

Keying all this in at the till is both time consuming and prone to error, and so gradually bottles, cans and packages are being printed with special bar code labels at the manufacturing stage.

The codes are a number of

spaced thick and thin lines which can be read by a special miniature light source and photocell—a "wand"—passed over the label by the operator. Alternatively, the code can be scanned by laser beam. An output of current pulses results which is deciphered by the associated electronics numerals which are recorded

for later analysis by a computer.

In science, engineering and production, information can be collected by data loggers. These are really sampling and recording (or transmitting) systems. They can examine, for example, a number of sensors and transducers at regular intervals which can be fractions of a second or many minutes. typical application is the measurement of air pressure, temperature and wind speed/ direction at unmanned meteorological stations. The readings can be kept on tape for physical

central point over phone lines. general, the fact that data often is initially generated, not in cosy offices but in the salesman's car. delivery man's van or on the factory and warehouse to produce data outputs. floor, has given rise to the port-

able terminal. These terminals really came of relatively cheap solid state memory occupying not much but programmed to do some of the work now done within machines at bank branches.

more space than a matchbox. Easily held in the palm of the hand, they can nowadays store well over 100,000 characters.

Thus, for the salesman for card-sized piece of plastic. Such the terminal and at the end of storage capacity allows the the working day the unit is connected via an acoustic coupler over a phone line to a central computer. In a minute or two, the hand-held unit empties its contents; then with transmission in the opposite direction, the terminal can receive new instructions or data that the salesman can see on the display. In some cases, new ing there is a growing need to programmes for the terminal capture more information at the can be "down loaded" from headquarters, changing the

The market leader in this MSI, which is believed to have installed over half the world's units. In this country the main manufacturers are Unilever company), APT Electronics of Reading and a relative newcomer, Microfin of Egham, Surrey, backed by the Department of Industry, and the British Technology Group.

But there are a number of contenders including Azurdata, British Brown Boveri, Burr-Brown, and Portable Microsystems—recently a Swedish-based company Hugin, entered

Notable orders

Some of the orders obtained by one or two of these com-panies have been notable. Recently British American Tobacco spent £500,000 on equipping 100 of its salesmen with units made by APT Electronics while UCSL has scored notable successes with the Unichen pharmaceuticals chain and with Gallaghers.

There are other kinds of terminal that allow convenient direct entry. Image Data, CIS Recognition and Quest Automacollection or transmitted to a tion make electronic "writing pads" that allow the user to nised by an X-Y co-ordinated grid structure under the pad. In the case of the Image Data unit, the pad can be simply touched

British Rail has bought £200,000 of the Quest units for entering time-table information into an IBM computer. The unit called Datapad, was considered to be the only system capable of entering clean data at source. Meanwhile, one of Image Data's first orders has come from Scot-Bowyers, the West Yorkshire meat company, where it will be used for order entry.

Another system, recently introduced by Geisco (part of U.S. General Electric) allows data to be entered over a phone line from any ordinary telephone instrument. A small keyboard generates a different pair of tones for each character on the board and these are recognised at the receiving end for use by a computer. An acoustic coupler is used so that the telephone does not have to be rewired in any way.

And of course, if the computer is equipped with voice response it can talk back over the same phone line to the cal-

Nordic states mount a challenge

CONTINUED FROM PREVIOUS PAGE

IBM not unexpectedly domi-nates the Nordic mainframe senerally estimated to enjoy well over 60 per cent by sales value. IBM and to a lesser extent the other international computer companies have so far been favoured by the tendency of Nordic buyers to go in for large, centralised computer net-

IBM has a large manufactur-ing base in Sweden which specialises in making high-speed printers, of which about 80 per cent are exported. The American group's Swedish subsidiary recorded a 1980 turnover of SKr 2.8bn (\$510m) of which half was generated by exports.

Sperry Univac, which benefited from its co-operation with Saab-Scania and which took over Datasaab's mainframe output, is the second largest supplier to the Nordic market, although Honeywell Bull has secured a 27 per cent share of the Finnish market, thanks largely to having the Finnish conglomerate. Nokia, as its agent.

In Denmark, Regnecentralen action system. The computer offered national resistance to operation falls under Nokia the international computer manufacturers, but had to be telecommunications bailed out by Government and in 1980 contributed sales of owned utilities in 1979. Last FM 482m (\$110m) to the group year, it was taken under the total of FM 46bn.

wing of Standard Electric Kirk, ITT's Danish subsidiary.
In the small computer field, however, the Nordic challenge is much stronger and several companies have started to show their muscle abroad as well as on the domestic markets. The current swift growth in small business systems, distribution processing and peripheral equipment in the Nordic area provides specialising companies with a useful domestic base for international marketing.

Names which have become known outside the Nordic area over the past couple of years are Nokia of Finland, Norway's Norsk Data, Christian Roysing from Denmark and, alongside the big new Ericsson venture in Sweden. Facit, the office machine subsidiary of Electro-lux, which took over Datasagh's business computers in 1979.

Nokia produces its own minicomputers, the Mikko range, de-veloped originally to meet the need of Kansallis-Osake-Pankki, one of Finland's leading commercial banks, for a cash transelectronics, which also rups a

puters, has an intensive product development programme and the CR 80 minicomputer, has started marketing them through its own subsidiaries in Britain, West Germany and Sweden. Nokia is working on a tolerant terminal teletext terminal, internal office networks and videotex systems and has gone into personal computer business with its micromikko computer.

Norway's minicomputer manufacturer, Norsk Date, has re-corded annual sales growth of more than 40 per cent over the last couple of years and expected to post a turnover of well over \$70m last year, of which about half would have been export income.

Last year, Norsk Data esti-mated that it would make about 700 minicomputers. It launched its third generation 32-bif machine the ND 500, which managing director, Rolf Skaar, described as "the fastest available on the market."

Christian Roysing, the Danish competitor, has won a contract to develop the debit card net-work for the Danish savings banks but its main successes have been in supplying data net- 2 similar foreign marketing

The company has sold more taken some important Water from 4,500 Mikko minicom orders.

The core of its business is designed as a so-called embedded computer, i.e. to to which software can be added. Its computers are embedded in systems with ICL mainframes among others. Christian Roysing increased sales fourfold from 1975 to well over \$20m in 1980 and aimed to reach a manufacturing capacity of 1,000 computers a year by the end

Each Nordic country has a promising microcomputer can-didate. Finland's Notice is marketing a personal consputer. Sweden's ailing television com-pany. Laxor, has a flourishing computer subsidiary which has sold more than 15,000 personal computers. It has a turnous of around \$13m and expects annual increases of 50 per cent.

Norway's Mycron introduced.

last year a new modular 18-bit multimicroprocessor system, the Mycron 2000, which it is marketing both in Europe and the U.S. From Denmark, Dank Data Elektronik is embarked on

Sandmen d sign of the sign

Management of the second of th

works for space satellites and venture with its small pro-defence communications. It has fessional computer, the SPC/1.

COMPUTERS XV



Data General's Nova Four computer has useful applications for commercial environments that require both scientific functions, such as route-planning and schedule analysis, and traditional inventory control and accounting functions

Localised data networks are the minicomputer's latest offspring

Rapid communication within office or factory

TOWARDS THE end of last tronic translator which takes the year, Computer and Systems electronic signals understood by Engineering (Case), a small a computer and converts them (£12m turnover in 1980) but into the kind of signals which fast-growing British electronics can be transmitted down a tele-company, offered 2.5m of its phone line]. ordinary 20p shares for sale at 225p a share.

The offer was oversubscribed more than 30 times, reflecting the enlightened interest the City is showing in electronics shares these days. The success of the Case offering was further proof-if any was needed-of a new surge of enthusiasm for data communications, Case's

This enthusiasm has its origin in the possibilities for business efficiency through linking computers and terminals of a wide variety. It has been fanned by the evolution of the new silicon technologies which make pos-sible efficient and reliable data communications at an economic

Until now, the major use of data communications has been in large, mainframe computer systems and the large computer networks needed to run airline reservation systems or electronic mail for international banks.

With the growth of the business minicomputer, all that is changing. Indeed, in the past months, there has been a flurry of interest in methods of fransporting data at very high speeds over very short distances, typically within the confines of a single office block or factory

Techniques

The key to the success of these local area networks, as the techniques used for this purpose have been dubbed, and other methods of commercial data communication, is relia-

bility, maintainability and cost. Data communications technology is, in general, well established. What is new is cheap communications devices that make it an economic proposition for a retailer operating a number of sales points to combine the information from all of them and send it along a telephone line to a central computer for consolidation at the most economically favourable time; or for a company to instal television-like visual display terminals can send each other memoranda whether or not the receiving station is manned.

The techniques of data communication, in fact, are all about reducing the cost of transmission. Transmission usually takes place over wires or cables, telephone or telegraph channels of lower average circuits, satellite links or in speed, dynamically allocating special cases—advanced radio methods such as cellular radio. As Roger Evans, vice-president, marketing, for the fast growing U.S.-based communications company Micom-Borer puts it: "Any computer from the terminals attached to system supporting multiple the device are interleaved in a remote terminals does not have to be very large before the cost

computer and terminal equip-[A modem is simply an elec- lines can best handle the out-

the telephone lines and

modems exceeds the cost of the

Telephone lines are expensive and—with most systems—un-used for a large percentage of the time. The answer is to use concentrators or multiplexers, electronic devices which accept the information from several terminals and combine it in such a way that maximum use is made of the telephone network. Mr Evans gives as an example a U.S. company with a large scale nationwide data communications systems.

"The system had grown, over years, in an unplanned manner, responding to crises, using point-to-point telephone lines to service new locations as the demands of the organisation dictated. Before long it was using more than 100,000 miles of leased telephone

"With the intelligent use of multiplexers and concentrators, the line cost savings achieved excess of \$50,000 a

How is this achieved? Mr Peter Burton, managing director of Case, sees data communications divided naturally into transport.

Transmission be sees as the bysical process of establishing data paths between the devices to be linked together—the telephone lines or satellite channels and their associated modems, together with the special monitoring equipment necessary to ensure that a net-

work is performing to capacity. Transport he defines as the technologies necessary to provide multiplexing and switching facilities: "A data transmission network consisting of telephone circuits and modems alone is inflexible. expensive and Because of the high cost of circuits, means must be found to allow several data links to share each of the circuits. Also, is becoming increasingly necessary to provide a means of switching the data links to match users' needs just as telephone callers are switched

phone exchange." Two of the most powerful techniques devised to solve these problems are "statistical

to their destination by a tele-

The statistical multiplexer (or statmux as it is inelegantly called in the business) divides a data channel into two or more speed, dynamically allocating channel space according to demand in order to maximise data throughput at all times.

The statmux is a time division multiplexer; the streams of electronic pulses coming in synchronised manner so that the receiving statmux knows from where each pulse has come and where it is to be sent. And it selects which of the available outgoing telephone

Statistical multiplexers concentrators are available from a range of companies including Olivetti, Eurroughs, Case, Network Technology, Network Timeplex, Racal, IBM. ITT, Menzies Communications Services and Philips Data Systems. The newest machines are

cheap enough to be considered even by the first timer. Timeplex, a. U.S. company with a leading position in mutiplexing, pointed out in launching its E-series: "The lower tier market is characterised by users of small to medium sized minicomputers with remote, asynchronous (Stop-start) terminals. These users are new to multiplexing and overall cost rather than network sophistication is the determining factor in equipment selection."

"It costs £1,660 a year for a dedicated line of 50 miles, £4,500 a month for a line extending 300 miles and beyond. With the E-series multiplexer costing as little as £975, it pays for itself in a very short time."

Switching

Packet switching is another method by which information can be switched through a netand where information originating from more than one source can share the same cir-The stream of electronic pulses is divided into groups or packets each with an agreed format, comprising identifier, address, message and tail, and released on to the network.

It is the job of the network computers to route the packets to their destination by the most cost effective route, taking into account line failures and so on.

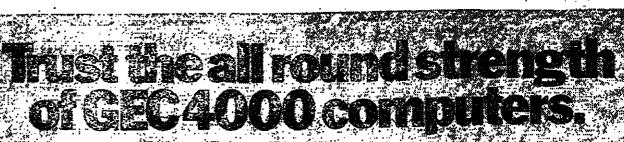
Most European telecommunications administrations are now establishing national packet switched data networks. The impetus was provided by Euronet, a packet switched network set up to provide a means for scientists and technologists to gain access to the large com-puter-based data banks. Diane (Direct Information Access Net work-Europe) is the EECsponsored information service that uses Euronet as its commu-

nication vehicle. The world-wide banking network, Swift, is also a packet switched network. If, however, there is a need transfer very large amounts

of information very quickly from one place to another, one answer is the Tesdata Hyperchannel. This runs at the prodigious speed of 50 megabits second-that is, 50m individual electronic pulses a second or roughly fast enough to send 12 average novels from one point to another in one second. The Hyperchannel is now available for IBM, Univac, Honeywell Modeomp, DEC, CDC, General, Perkin Elmer and SEL

equipment. Data communications is just beginning its principal growth phase. No company making good datacomms products should have less than a full order book for the foreseeable future. Note: data communications is

ally those brought up on conventional data processing. Case publishes and distributes an excellent introduction by Pete: Burton, Pocket Book of Com Communications, рисст



GEC Computers accept a unique position in computer fishing Our roots go back even before the time of Charles Babbage the tather of the Computer. (Gerpredecessors actually supplied find with electrical equipment for his experiments).

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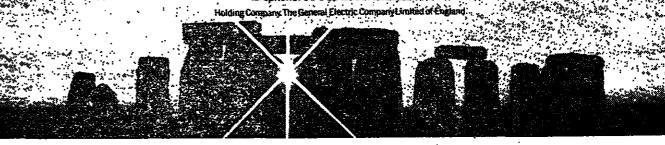
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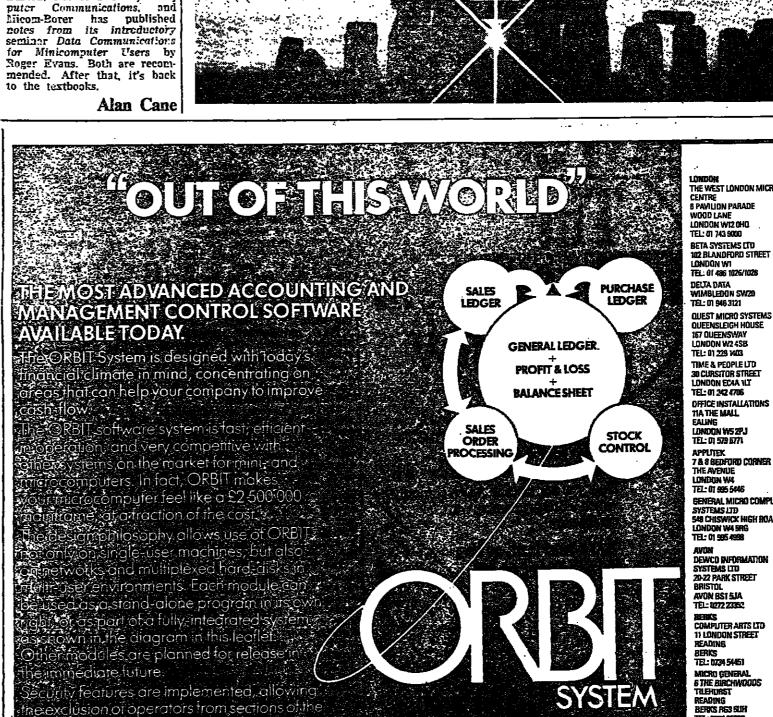
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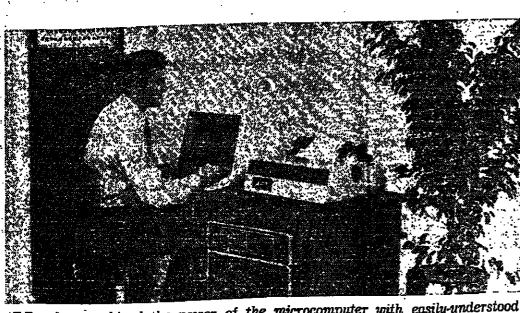
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COMPUTERS XVI

Memory capacity goes on increasing at a phenomenal rate. David Churchill traces how.

Discs and cassettes lead the way

INFORMATION generated by computers has to be stored, otherwise much of the effectiveness of the technology is lost. Not surprisingly, therefore, the development of computer memory systems has gone hand in hand with the rapid strides in computer technology over the past few decades.

In the 1950s, when computers s we know them today were almost archaic in comparison, various systems were used to retain information. These methods ranged from punched paper tapes to electric vacuum tubes.

It soon became clear, however, that such systems were limited in their usefulness and so the industry turned to other forms of data storage. Magnetic-based memory systems soon became widespread and are still an important part of the data storage market today, although the growth of silicon chip technology has proved the fastest

growth area.
The basic magnetic memories were magnetic core systems, consisting of tiny ring magnets threaded by control wires which magnetise and demagnetise them according to the pattern of "ones" and "zeroes" which re to be stored. Over the past 10 years or so, the size of such magnetic core memories has hrunk considerably. But they still remain relatively bulky, slow and expensive and are now only used in a minority of storage applications.

Thrust

The main thrust of magnetic nemory systems has been in drum tapes and disc systems. Drum storage, achieved with cylindrical drums which revolve at very high speeds, are still used for large computing systems because they have very ow error rates, although they are still relatively expensive.

However, with the miniatur-isation of computer systems. has grown the popularity of both rigid and flexible disc storage systems. These discs, which are like a record with information stored magnetically and scanned by moving recording beads, offer substantial storage of information. In the mid 1960s, for ex-

ample, a rigid disc could hold about 100,000 bytes to the square inch; now the storage capacity is over 7.5m bytes to the square inch and by 1990 this could rise to 100m bytes to

This considerably greater capacity has been achieved by cramming more hytes into each inch of line (the equivalent of the groove on a record) and by squeezing the lines closer together.

The disc systems are basic-ally spread into two types. rigid and flexible. Rigid discs are aluminium discs coated with oxide and about 14 inches in diameter. There are about 40 or so companies that produce them, mainly in the U.S., and IBM is generally regarded as having the lead in the appropriate technology. The total market for rigid discs is well in excess of \$40n a year according to market estimates.

The flexible-or "floppy"discs are the expanding sector of the market. The discs are created by coating a flexible oxide onto a nylon disc. These have a much lower storage capacity than a rigid disc but are a fairly cheap and robust storage system.

Market estimates indicate that over 1m flexible discs are being sold a year and the market is growing rapidly. This de-mand has been helped by the growing market for word processing systems. Most word processors use small flexible discs just over 5 inches in size, compared with the "normal"

sized flexible disc of 8 inches. Within the next two to three years, according to market estimates, over half the 4m or so flexible discs sold world-wide could be mini-discs.

Apart from discs, one other important magnetic memory storage system is provided by tape cassette very similar in appearance to the casettes used for conventional audio recording. The major difference, however, is in the electronics which control the flow of information to the computer. For the user of the home computer, or the small businessman with one of the very low-priced micro-computers, the ordinary cassette system will suffice until they can aspire to a floopy disc system at least.

The chief threat to dominance of the magnetic disc systems will come from semi-conductor memories which have developed in line with the phenomenal growth of silicon chip technology over the past decade. Such semi-conductor memories had just under a fifth of the total memory market by the late 1970s, estimated to take nearly a quarter by the mid 1980s.

The growth in chip storage systems is shown by the fact that it was only a few years ago that the micro-electronics industry was hailing as a significant achievement the ability to make chips with a storage capacity of just under 5.000 bytes. Nowadays, chips that can store over 65,000 bytes are commonplace.

There are a wide variety of semiconductor memories on the market, mainly from U.S. and Japanese manufacturers. Each particular memory system is usually geared to a specific computer application.

One of the largest sectors of the market are random access memories, which are broadly divided into two types static and dynamic memories. Dynamic devices can be made more cheaply and have greater capacity than their static counterparts. However, dynamic memories have the disadvantage that they require special additional circuitry to ensure that information stored within them is not lost within a few **5**୧୯೧೩ರೆ.

But, like all random access memories, there is the problem of retaining data when the power is switched off. To counter this problem,

manufacturers have developed "read-only memories" which do not lose information when



Staff produce technical reports at the word processing centre of Ferranti's Edinburgh offices, using the Xerox 850 with display 24 - character units

power is removed from the system.

developments Further memory systems in the 1980s are likely to come from magnetic bubble memories state devices in which the data is stored and controlled mag-netically. Although bubble memories are still a relatively expensive form of data storage, the price is expected to fall quickly.

Other new systems could also come from applying optical video-disc systems to data storage. Such video-discs already have a storage capacity equivalent to the theoretical limit achieved by magnetic discs, although there are a number of potential drawbacks.

However, it remains certain that by the end of this decade data storage systems will have made technology gains similar to the advances over the past

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With electronic funds transfer banking takes another big step

Towards the 'cashless society'

THE BANKS and the financial community are wedded irre-vocably to the development of large computers. When IBM launched the first of its very big new machines, the 3081, two years ago, it was significant that the banks were the first in line to place orders for these computers which are able to cess instructions at a rate of

about 10m a second. The UK's first 3081 was installed at National Westminster Bank's Goodmans Fields site last August. The banks need computing power of this kind to run a whole range of automated services, from cheque clearing to "through-the-wall" cash dispersers. Now they are beginning to look at the potential of cash dispersers. tial of smaller computers and

computer-based systems. These smaller machines can provide counter services, in-formation on the desk top for the banking executive and speedier inter bank clearing.
The banks have to provide new and attractive services, but

in a way which adds little to their costs in staff or real Mr Robert Lipp, senior executive vice-president of Chemical Bank, told a conference late last

We in the banking industry must work aggressively to ensure the continuance of our dominant position in the payment system arena of the luture. Failure to do this may well leave us stripped of the most profitable segment of the retail market, and, to make matters worse, saddled with the most expensive and outmoded delivery system in the market!" banks are not sitting still. In fact, only weeks ago, Chemical Bank (which is one of the largest New York banks) introduced formally a new service called ChemLink.

Described as an international computer-based cash management system. ChemLank runs on the largest and most powerful computer bureau network commercially available, the Mark III service provided by Geisco.

Geisco, the computer services arm of the General Electric Company of the U.S., has three Supercomputer centres, two in the U.S. and one in Holland, to link its users in some 26

CONTINUED ON NEXT PAGE

offered its customers access to the Mark III network through simple computer terminal installed in the customer's office and linked to the nearest net-work access point by telephone.

The significance of the new

service offered by Chemical Bank in collaboration with Gelsco is that banking facilities can now be offered to corporate clients on the same basis - a company can carry out a signifi-cant proportion of its banking computer terminal which can be as simple or as elaborate as

Principle

The ChemLink system deve-loped in the U.S. out of necessity (the McFadden Act prevents U.S. banks from providing commercial banking services in more than one state) but it embodies a principle which is going increasingly to shape banking at a corporate and personal level: the principle of making the customer do more of the work. This can only be achieved by the use of computer-based tech-

According to Chemical Bank, for example, "Within two hours of money entering or leaving an account with Chemical Bank in London, the transaction can be reported by ChemLink in detail. The same is true of many transactions on New York accounts ... No other system currently

operating approaches the speed of reporting provided by Chem-Link." Probably true, but for how long? All the major banks are working on ChemLink-type systems and will announce them in due course.

The banks have traditionally bought their mainframe computers from IBM-which has the lion's share of the banking market in this country, Bur-roughs and NCR. Other manufacturers, Philips, Olivetti, Data-Saah and so on have made their marks in specific areas. But with the development of microcomputer based systems, a whole new range of companies has

moved into the financial arena. Fortronio, for example, is a comparatively small company based in Dunfermline, Fife. which has achieved a growing reputation for financial terminals based on its work with traditionally Barclays Bank in an experiment

During 1982 the Financial Times has plans to publish the following surveys on the

ELECTRONICS, BUSINESS SYSTEMS. **TELECOMMUNICATIONS**

and related industries.

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Satellite Communications and **Broadcasting**

Mar 31 Electronic Payment Systems

Electronic Components Electronic Components Industry Federation Show — April 20-22

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A finance communication system (right), the IBM 4700 provides banks, building societies and other financial institutions with a family of compact computer devices for front and back-office operations.
The system features a range of compact terminals to allow staff to process is insactions quickly. The 4700 system is compatible with the IBM 3600 series of finance values to products and and offer improved performance and larger main storage capacity



Cashless society

CONTINUED: FROM PREVIOUS PAGE

the point of sale. The door has also been opened to manufacturers of at least, for reader/sorters, huge microcomputers and devices costly computer-based machines which convert televisions and able to read the magnetic marktelephones into viewdata systems. Just as Chemical Bank into their respective piles for and its competitors are looking clearance. to provide banking services to their corporate customers in ning to provide banking services

to their private customers in

All that is needed is a device to display information, the domestic television set, for example, and a keyboard so that messages can be sent to the bank's computer. It also requires a stiff system of passwords for security and a certain

Chemical Bank and other U.S. banks have trials running in home banking using personal equipment to run the new computers as the communication device. German banks are running a home banking service over the German viewdata system, Bildschirmtext. The pioneer here was Verbraucher Bank of Hamburg, whose data-processing staff wrote the necessary software to enable its cus. already bought its first five tomers to investigate the state credit clearing reader / sorters of their accounts, make simple from Recognition Equipment.

in electronic funds transfer at Rediffusion computers: nated the market, in this country example; the ings on cheques and sort them

These machines can process up to 2,000 cheques a minute. their offices, so they are plan- National Westminster, at its Goodmans Field site, has 14 IBM 3890 reader/sorters, all linked to whichever of the array of mainframes is controlling the clearing operation. A day's burden of cheques can be cleared in six passes through these machines

Automation

This year, all the clearing new market has opened up, worth some £10m a year, for the system. Apart from the tradi-tional suppliers, specialist Late last year the clearing optical recognition equipment banks announced they had companies such as Recognition Equipment and OCR Scandata are expected to feature strongly in the competition. Indeed -National Westminster

But banks need computers In the UK, while plans are most urgently for electronic still under wraps, all the banks funds transfer, the substitution are active in this field, experi of the movement of electrons menting with systems provided down a telephone line for the by viewdata experts such as movement of bits of paper.

Bankers Automated Clearing IBM has traditionally domi- Services (BACS) is an early organisation accepts magnetic tapes bearing, for example, details of salary payments and prepares new tapes to be sent to the appropriate banks containing the necessary details

Swift, the Society for Worldwide Interbank Financial Telecommunications, now has over countries. It is a computerbased network that represents electronic funds transfer on a from bank to bank at high speed but at the most economic cost through the use of a technique called packet switching.

On a smaller scale, CHIPS provides New York banks with the means of handling interdegree of trust in the system. banks are changing to automated national interbank dollar trans-Citibank. Chase Manhattan, clearing of credits, and a whole fers. Last year it moved to same day settlement. The UK equivalent, CHIPS, based on Tandem minicomputers is ex-

agreed on a formula to proceed with electronic funds transfer at the point of sale—the first step to the "cashless first step to the

It will mean the development. of special terminals and communications systems to link the terminals to the banks' computers. A whole new chapter in the history of banking and computers is beginning to

Alan Cane

Robots that talk and listen

Elaine Williams discusses new work on artificial intelligence

SCIENCE FICTION writers mitted themselves to the have long produced tales about equivalent of \$400m over the thought. The idea began with puter systems which will em-Karel Capek, the Czech writer, body many features of the in the 1920s who first coined the Expert system.

When the system in the simplest examples which humanoid machines in a stage play and continues with the eccentric, but rather more

R2D2 and CP30, found in the lates a medical film "Star Wars." specialising in In reality, robots are blind, diseases. deaf and rather dumb—capable of doing relatively simple tasks which have to be programmed into the machines' memories. The robots will not deviate from their orders until a new programme is placed in its elec-

ronic memory. Researchers throughout the world are trying, however, to develop computers and robots which can convene in human speech and be capable of learning by experience instead of following strictly to the programs stored within the elec-

tronic memory. The work on artificial intelligence is being tackled on both the hardware and software fronts. As regards hardware, researchers are looking at ways of making robots more flexible in operation. For example, a large area of research revolves around the development of robots which can identify one particular component among many different items, pick it up and place it where needed.

The difficulties in doing this relatively simple job for a human, are enormous. The robot must be able to see-using some form of camera linked to its computer control system-and identify one component from several angles, let alone differentiate between different components.

Known as "pick and place" robots experiments are being carried out in a number of research centres worldwide inchuding Edinburgh University in the UK and Stanford University in the U.S. At Edinburgh, researchers produced a system which could identify the various parts of a toy tractor and assemble it.

But if artificial intelligence is to emerge, the way in which computers are designed and programmed, has to be altered. A step towards this has been the emergence of Expert systems—which looks to be a major area of interest in 1982. The Japanese alone have com-

human-like robots, capable of next 10 years for the developcoherent speech and rational ment of fifth generation com-

explains an Expert system is a system developed in the U.S. called MYCIN which is an lovable robot characters of interactive system that simu-

A use for GPs

It engages in question and answer conversation with doctors needing specialist help and in three quarters of the cases gives the same advice as a human expert.

The doctor can ask for help on the identification of microorganisms and the prescription of antibiotics and also for explanation why it has given certain advice. Humans can also improve the computer's knowledge by telling it about relevant knowledge they realise is missing in the program.

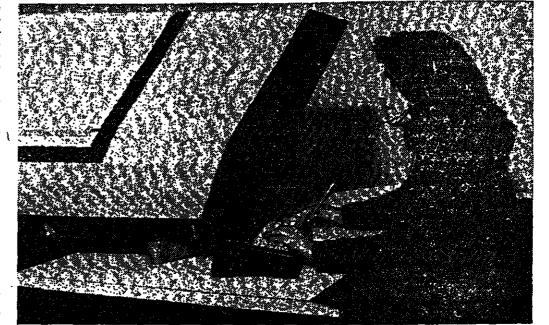
Hence a program like MYCIN does contain elements of artificial intelligence because it allows the computer to learn and to explain itself instead of producing streams of informa-tion which have to be interpreted by humans which is the most common way in which computers work today.

By comparison with the work on artificial intelligence, pro-gress on producing machines which can understand speech and reply is much

Many companies are working on the problems of speech synthesis and recognition and include FTT Semiconductors. General Instruments, National Semiconductor and Instruments.

Texas Instruments was among the first to bring out a consumer product using techniques for speech synthesis. This was the well-known "Speak and Spell" toy which had all the circuitry squeezed onto silicon chips. There are a number of electronic chess games which also employ speech synthesis.

Work on speech synthesis is divided into two areas. They are recognition, which tries to understand what is being said and synthesis where a computer "talks" using speech information stored in its memory. The earliest application for for Prestel pages instead of



computer-aided-design system featuring voice control to speed operation and give more command flexibility has been introduced by Calma, a leading supplier of computer-sided design and manufacturing (CAD/CAM) systems to the microelectronics industry. The voice-control unit, which can hold over 50 words and can be "trained" in any language, gives the Calma system a command input rate significantly higher than with conventional systems, and demonstrations have already shown substantial productivity improvements in the design and redesign of complex integrated circuits.

option on Calma's recently introduced vector memory display, and enables the operator (above) to take full advantage of the system's high processing speed and internal computing power. The local processing capability of the vector memory display frees the central pro-cessor from the burden of continuously refreshing the display screen and allows complex interactive functions to be carried out by single commands, and the addition of voice control allows these commands to be made without the need for a keyboard, light pen or menu display.

speech synthesis were in voice punching numbers on a keypad coding systems used in telecommunications but companies believe that there are numerous applications ranging from the rather frivolous such as speaking clocks to more serious ones in industry to warn operators monitoring complex

One of the most promising areas of research is aimed at telecommunications and computing applications. Companies such as Bell Northern Research and British Telecom are looking at ways in which speech recognition and synthesis can be of benefit.

For example, British Teleresearch laboratory com2, believes that the techniques could be used for man-machine communication using voice input over the telephone lines. Commands range from asking

to ordering central heating systems to switch on remotely down the telephone line.

To reproduce electrically human speech researchers have had to study closely the system of sound reproduction which comprises four basic elementsthe lungs, the vocal cords, the articulators (tongue, lips, jaw and palate) and the brain which co-ordinates everything. Sound is simply expelled air

which is altered by the articulators to produce the variety of noises which make up human speech. Two basic techniques are used to produce speech. One

is called the formant method; the other is the linear predictive coding.
In simple terms linear pre-

dictive coding tries to reproduce

the shape of waveform of the

sound produced while the

the speed at which a word is Each word is analysed by breaking up the speech fre-

formant method looks at the

frequency and amplitude of the

software company, announced

Logos a research tool claimed

to help the development of

speech recognition systems.

Based on the work of the Gov-ernment Joint Speech Research,

it analyses whole words in a

way which is not sensitive to

In November, Logica the UK

component sounds.

quency into 19 narrow bands and looking at the energy of the sound uttered. The result is stored as a pattern of black dots called frames to which the device can compare against other spoken words.

Logica says that Logos is capable of learning 2,000 words and can recognise several hund-

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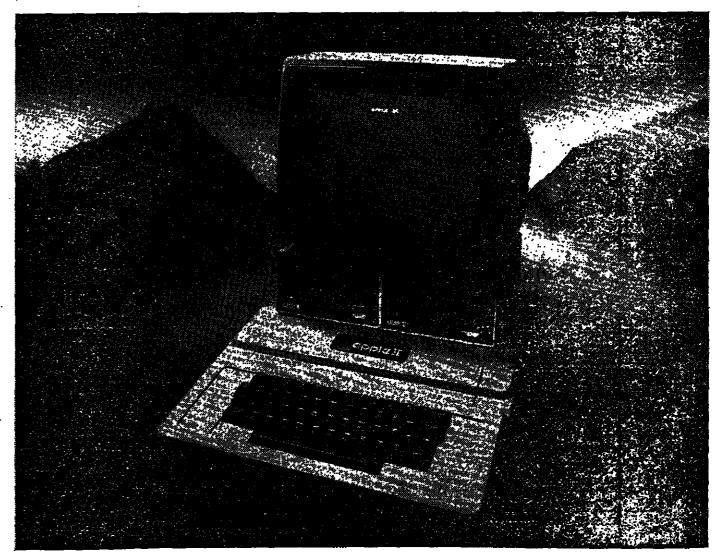
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the pers	sonal computer

Despite doubts over privacy, microcomputer advances have aroused more interest among doctors. Jason Crisp reports

Patient progress in the medical world

UNTIL RECENTLY most of the microcomputer industry has are becoming available—often an enthusiasm for computers payroll and word processing-medical profession appeared been particularly instrumental written by enthusiastic doctors and usually writing their own Some systems being develop fairly immune to computers. But in increasing the interest of the or by established computer com- software. But as an extensive computers has begun to produce tains of paper work, records conjunction with the medical a modest use of them in hos- and analysis are a natural pitals and some general practices; and interest and awareness in them has grown rapidly.

According to Dr John Dawson, head of the professional and scientific division at the British Medical Association, there is still considerable resistance Dawson says there is now a within the mainstream of the "massive interest" in computers. "I think it is because practitioners. He estimates that the people who have controlled by the end of 1981 as many as computing have been unable to get away from the idea of having

azinframes." Considerably more computer
The recent growth in the programs for general practice

enough area to benefit from computerisation. The obstacles have included a lack of suitable software, financial, privacy and the attitudes of doctors them-

Attitudes are changing. Dr puters being shown by general two thirds of GPs had considered using computers in some way.

profession. The micro-computer also gives doctors the privacy which they would not be confident of having if the work was being processed on a mainframe at another location.

A prediction

the Royal College of General Practitioners predicted in a report that computers would be in widespread use in general practice within five years there were hardly any using them. Those who did were GPs with

by Scicon found: "Most GPs have no wish to learn how to

systems are now available for GPs from specialist companies like Abies Informatics and General Practitioner Computer Systems and also from established computer software houses

Most systems at present concentrate on the administration the practice. Facilities include an age/sex register of patients sometimes with an automatic recall, repeat presdrug stock control.

Some systems being developed will fell a doctor prescribing for a patient whether there are any contra-indications and whether it will inferact with another drug edready prescribed.

likely to help a GP make a diagnosis. Already a pilot system is being tried by the U.S. Navy in nuclear submarines (which don't have a doctor aboard) to diagnose

The Scicon study for the BMA also saw a development in Encounter Systems, in which brief notes are made of consultations with each patient. It could be used to avalyse recent

lation, trends in patient health carefully by a number of com- brought a rapid introduct and the workload of the GPs.

Seven sold

The complete computerisation of clinical records is still seen as rather futuristic and fraught with problems and having a considerable effect on the way doctors work. The cost of transferring information from manual records and the memory to store it would be probabilive

Microcomputers are also being used within hospitals in a wide range of individual applications but usually only where individuals have been particularly enthusiastic. But the potential market in

problems within the local popu-hospitals is being looked at medicine in the puter manufacturers. Last year a new joint venture company vas formed between BOC's Computer Service subsidiary

and the U.S. company Shared

Medical Systems, with an

initial capital of £2m. Since its formation it has sold seven patient administration systems to the National in hospitals in the last quarter Health Service and also a of 1981 Health Service and also a system to the private Cromwell hospital. The systems cost typically between £60,000 and £100,000 and run on Digita,

Equipment mini computers. over 500 hospitals in the U.S.

Mr Roger Wallhouse. managing director of the Medical Data Systems demand for computer sy

Applications of computers in administrative systems occupancy, waiting lists, nursing Shared Medical Systems has duties, pharmacy stock control supplied information systems to —to medical analysis of a number of tests, such as electro

Geoff!

Pre

Demands for complex weapon systems stimulate the computer industry.

Defence needs aid technological progress

THE WORLD'S aviation and certain that the problems defence industries have for involved in putting men on many years been at the spear—the moon and bringing them head of the development of back safely, or in transmitting computer technology—and for colour TV pictures of the one simple reason. Defence has surfaces of distant planets been, and still is, a high-across literally billions of spending area of government miles of space, could never spending area of government activity and it has been traditionally one of the very few areas (space research is another) in which the so-called "frontiers of technology" have been consistently pushed for-

Demands for ever more complex weapons systems, such as guided missiles and aircraft, have in turn generated new problems calling for new techniques to solve them. Money defence-related activities has not been in short supply in the past few decades, and it is probable that some of the most advanced uses of computer technology to be found anywhere in the world are now being employed in the various scientific and other research establishments of not only the Western but also the Soviet world. Many of these uses are still secret but in time they will percolate through to everyday

the safe functioning of every The traditional use of computers for solving abstruse mathematical and other problems in the aircraft, aero-

have been solved without the

extensive use of computers. It has been estimated, for example, that one recent manned Space Shuttle flight

involved several trillion com-

puter calculations to ensure

engine and guided weapons industries is now being extended by the employment of computers as specific tools in their own right. Computeraided-design (CAD) and Computer - aided - manufacturing (CAM) are phrases increasingly heard in those industries, especially in association with computer graphics-the use of computers to create and modify pictures on cathode ray screens. Computer graphics have been compared to elecit is tricity in terms of the potential

effects, upon society, but already they are revolutionising some of the most traditional functions

aerospace industry. It is now possible, for example, by using computer graphics, for an aircraft designer to build up a threedimensional picture cathode ray screen of what an aircraft (or other product) would look like. From this visible manifestation of his initial design concept, the designer can see at once what needs to be changed to achieve his desired objective, and it is possible to make many hundreds of changes at considerable speed. The computer-controlled system can then move on to parts drawing, then to metal cutting and parts fabrication, with greater speed and less waste, and hence considerably greater overall efficiency.

Variations on the use of computer graphics in aircraft design include what is known as "dynamic analysis," in which complex computer programs can be written to provide a picture of something that hitherto had to be provided in model form. It is possible, for example, to show by means of computer graphics what the stresses will be on the airframe in a particular aircraft design, or to see what the airflow effects ing a model and testing it in a wind tunnel. In this way millions of calculations can be made in a few hours, obviating the necessity for actually con-

It has been suggested, for example, that carried to its logical conclusion, "dynamic analysis" will eventually replace the wind tunnel entirely as a designer's tool, making the tunnel as archaic in aerospace design as Stephenson's Rocket is to the locomotive industry of today. Virtually every major items like inventory control, aerospace manufacturer in the and other computations, calcu-

structing fatigue and static test

specimens, or models for a wind



Honeywell Level 6 computers which form part of the Whitehall Defence Communications Centre's automatic message routing and distribution system

world is now making some use of computer graphics, and as the capabilities of this new tool become more widely understood the benefits will spread.

Aviation and aerospace are also leading the way in the use of CAM, in which virtually every process of manufacture, from initial materials ordering through to metal cutting, final assembly and shipment of the finished goods, is controlled by computer to save time, effort and money. Messerschmitt-Bolkow-Blohm in West Germany, for example, is using CAM to assemble wing sections of the Tornado multi-role combat aircraft.

In civil aviation, the comparatively simple use of computers in airline seatreservations systems has been progressively extended, until today the computer is as indispensable a tool in running an airline as the aircraft themselves.

Computers are used to cover

lating flight schedules, crew training (through increasingly sophisticated flight simulation techniques), and more recently, can direct aircraft through onboard computers to fly the most economical paths through the sky from take-off to touch-down.

Even the flight decks of airliners themselves are about to undergo a radical transforma-tion, with the old galaxy of veying all the necessary information of such things as height, altitude, speed, direction, fuel state, systems functioning and so on in the simplest possible form, to make the pilot's task

In virtually every field, CAD and CAM makes the traditional design and management tasks easier, more flexible and more economic. They have already resulted in a sharp acceleration in the rate of growth of aero-space technology, and this seems likely to continue in the

Michael Donne

Indicative of the medical profession's growing interest in computer aids, pictured

above is a CBM PET computer with printer and dual drive floppy disc being used

in a medical environment

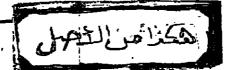
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Computerised process controls are being increasingly used throughout industry. Above: the control room in the nuclear fuel reprocessing plant at Tokaimura, north-east of Tokyo. Safety is a key factor and surveillance must be constant

Geoffrey Charlish on aids that cut down industrial costs

Preparing for a new breed of production engineers

COMMERCIAL investment, than any producoffeniented application. There are two main reasons:

white collar workforces have then so can the programmable sually been more amenable to change and the jobs they do are significantly easier to com-puterise. After all, customer arcalisting salary administra-tions and the rest are much the

and everywhere. Minisfecturing is different. It makes everything from engineering design through the production process itself to final testing and packaging. As a result, computer application has been piecemeal and any existing commercial computer

has been unlikely to participate. Thus, the chief executive's vision of a centrally-controlled plant that has raw materials

tronics industry itself has been prominent. Indeed, in semiconductor manufacture, no human, in any case; would be

able to perform the testing But in industries that are assembly-dominated the problem is at its worst because of the variability. The products are all different. Mechanisation has been pre-occupying these industries for a century or more

and endless ingenuity was evident long before the com-puter came on the scene. Now however, microprocessors are applying intelligence to purpose built machines and tester equipment. Results that were being obtained by complex mechanisms and relays are now being improved upon and cost reduced by micros and new sensor technology.

Furthermore, much greater product variability can be accommodated because the changes can often be made, not by electromechanical re-jigging out by re-programming the micro from a keypad.

to have its purpose-built assembly machinery but it is changing significantly as a new.

COMMERCIAL COMPUTERS. Of late, the programmable chemical, brewing beverage, ment is bought by the semi-charging out everything from arm, now generally referred to food pharmaceutical and power conductor companies; elected to bank statements as the robot, has made the generation industries. have generally attracted more headlines. Its main advantage interest, and certainly more is its versatility: just as the human hand can pick up and place accurately any object within its size-weight capacity,

> arm. But its cleverness has yet to match some of the single product computer-controlled handling and assembly machines found in say, the cigarette industry, or in the automatic assembly of electronic components on to printed circuit boards.

However, before long the arms will become real robots working on this concept in the UK alone. Robots will have pattern recognition and learning / deductive ability. Soon, they will be able to move about entering at one end and on the factory floor, too, and finished products coming out their skills will extend beyond of the other, is still quite a such operations as welding, spray painting and polishing. ay off.

The nearest approach has Working in groups, they will been in the petro-chemical be able to carry out com-industries, although the electrolete manufacturing and test sequences, passing parts to

each other. The so-called flexible manufacturing systems (FMS) step along the way. In a machine shop they are able to pick parts and cutting tools to keep computer controlled machining centres in continuous computer controlled production.

Sophistication

The machine tools themselves and their controlling computers are also reaching new levels of sophistication. In a recently introduced machine, from Fanuc in Japan, parts can be "constructed" on a screen and when the operator is satisfied with the "drawing" a button is pressed for high speed repetitive turning from bar stock. Eventually, such machines will be linked directly to CAD

In process control, basically concerned with fluids moving in and out of vessels and along pipes, automation is the rule rather than the exception. The Each industry will continue market contains companies such as Fischer and Porter, Babcock-Bristol, Foxboro, Honeywell, Kent Brown-Boveri: Rosemount breed of production engineers: Taylor Sybron and Westingmoves up this new learning house. They are all chasing the big users in the oil, petro-

In all these company's systems, the computer, on a continuous basis, examines temperature, pressure, flow rate, valve status, pump speed and similar plant parameters, decides what it must do to optimise the process and continually sends signals back to the heaters, pumps and other controlling devices to keep the

process in specification.

Nowadays, these systems allow the process engineer to design the control scheme on a colour TV screen and the process operator to see almost anyarms will become real robots thing he wants about the state with eyes several groups are of the process. He can call up coloured graphs, bar charts and trend curves and can view mimic diagrams of the plant itself with constantly updated numerical data for each vessel. pipe, pump or valve.

Process control is one of the few areas in which design of the product is integrated with its production control in the same system.

Engineering Research Association in which the engineer keys in the basic shape and dimen-sion details and the computer makes a drawing on the VDU

It then goes through a reverse evolution process to arrive back at the condition of supply of the metal blank, detailing the turning or grinding operations that will be needed to produce the part. It will list, on the draw-ing tasks to be allocated to the ing, tasks to be allocated to the available machine tools, allo-cate cutting tools and will even produce a time and cost estimate if needed. After the product has been

made, it has to be tested. Most of the effort has been needed in the electronics industry itself because, since the introduction of the integrated circuit in the '60s, manual testing has either become impossibly expensive, or in some cases humanly impossible (the micro-processor chip, for example).

So a worldwide \$1bn business has grown up in the three main areas of IC and discrete component, printed board, and complete system testing. Most of the component-testing equip-

makers nowadays expect to obtain good chips and most of the boards. The later they find the fault the more expensive it becomes - the penalty can be several bundred times bigger if

faults are present in products newly delivered to the cus-

Much effort has been put into board testing so that, in modern equipment a "bed of nails" multi-contact fixture descends on the PCB and a computer tests all the companents and interconnections

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tomer.

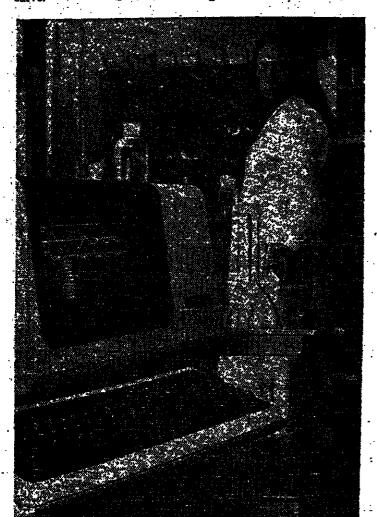
Such machines are roughly in the £50,000 to £100,000 price bracket, but are virtually indiselectronic equipment manufac

Worldwide, GenRad of Massachusetts has the lion's share of the board tester market. ame system. Other prominent vendors
The mechanical engineering include Teradyne, Computer industries are working towards Automation, Hewlett Packard this too. For example, a system and Fluke. In Britain, Mem-called PADDS has been de-brain and Marconi Instruments are lead houses former is part of the Schlumberger group.

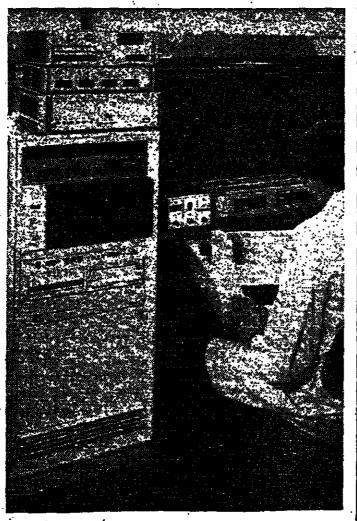
The testing of complete systems — aviation electronics a good example - often involves stringing togeher a number of specialised measur-ing instruments which are then put through a set pattern by a computer. Hewlett Packard has scored well in this area because transmission method devised for connecting the adapted five years ago as a standard in the U.S. and is now widely used throughout the world (e.g. the IEEE 488 bus). System test holds the biggest market share in autotest, mainly due to U.S. and Euro-

Computers are being increasingly applied in other manufac turing areas such as packaging and materials storage and several of the computer makers offer shop floor systems that look after work in progress, management, input and stock materials.

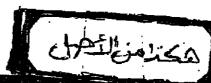
Eventually, all the systems will work together. But not just



Digital computers are used extensively in laboratory applications (left); a computer-based data acquisi-tion system (right) from Base Ten forms part of a test system for commercial vehicles manufactured by Leyland. Base Ten has also supplied a data-



conversion system to Leyland, together with a software package to produce half-inch 9-track computer tapes, suitable for analysis on Leyland's GEC 40-82 computer



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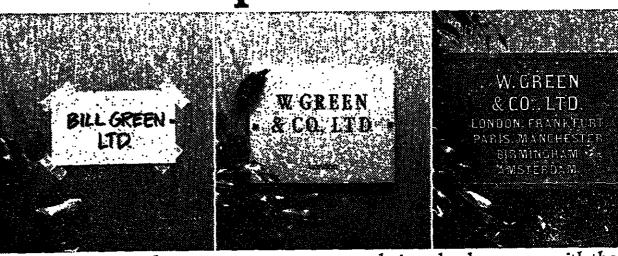
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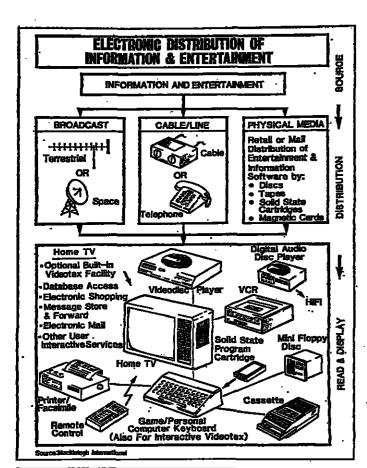
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Michael Dixon examines the prospects for computer-assisted learning in the schools

Making the classroom a livelier place



THE LONG - NEGLECTED customers of the education service—children whose intelligences run in directions other than the conventionally academic—have at last found a political champion. He is Sir Keith Joseph, Secretary for Education and Science, and his concern for these pupils borders on educational heresy.

Only the other day, for instance, he went beyond merely doubting that they thrive on the watered-down scholarly study which is all they are offered by most schools. This might well "contribute to the demotivation, the boredom and even truancy of many of them," Sir Keith told a conference in Leeds.

The result. he suggested, was that many ended 11 years of compulsory school lacking basic skills of reading, writing or numbering, as well as self-discipline and ability to concentrate.

"It may be that these children will absorb more readily these basic skills and basic attitudes . . . if the curriculum offers them more opportunities to use their knowledge—and the other skills and qualities they need —in practical applications."

But Sir Keith's public expression of concern for the many thousands of pupils ill-served by conventional curricula, drew little more than cynical shrugs from certain small groups of would-be innovators in local education authorities and schools.

The cynics, who would much prefer to be enthusiasts, consist of officials and teachers trying to spread throughout the UK educational network the great improvements in the process of learning which are offered by the computer.

The arrival of the micro and the attendant possibility of applying computer-assisted-learning (CAL) to virtually the whole curriculum of every school, could evidently be a blessing both to the teachers and to the life prospects of the children now championed by the Education Secretary.

"When well prepared and properly used, CAL has done wonders in motivating previously alienated kids," said one educational inspector. "Learning to make the computer do things—and most children seem to pick it up very fast—seems to switch them on to the more normal work. We don't know why

this happens, but it does.

"The only trouble is that unless you motivate these kids early on, well before they leave primary school, they tend to be lost to education for ever after. And rather than concentrating the re-

dissipating them."

During the past decade educators have begun to use the computer as more than an adjunct—a super-calculator with a memory—to conventional methods of teaching sciences and other numerically linked subjects such as economics and geography.

sources we have on using

computers to enrich the

whole of education from the

bottom up, as it were, we're

Computer studies, in the sense of the use and the role of electronic data-processing, have been added to the curriculum in many secondary schools and can now be taken as subjects in the 16-plus examinations. Schools are also teaching older pupils programming as a subject in its own right.

The development of usage from the academic heights of education downwards was perhaps inevitable given the initial dependence of most colleges and schools on time-sharing facilities. Since only a

few pupils could have access to a terminal at any one time, small groups such as those studying for GCE Advancedlevel exams could benefit most effectively. But in the micro, schools

But in the micro, schools have potentially gained far greater abilities. They can extend the use of the computer to a wide range of studies, using it to automate fundamental experiments in academic subjects such as chemistry and to log data gathered in less specialised projects, so that it hecomes integral to the control of the entire learning process.

Moreover, simultaneous access can be given to large numbers of children simply by "linking up a lot of monitors in a daisy-chain," as the inspector put it. "So there's not a shred of doubt that the possibility of building the computer into the educational culture right from the early years of primary schooling is there to hand."

But this highly destrable aim can be achieved only by a concentration of efforts, especially those of the nucleus of teachers who largely on their own initiative have pioneered computerapplications and the supporting, technically expert staff in the education authorities.

"We have to get teachers to define what they're trying to develop in pupils by teaching their particular subjects, show them what the computer can do to further those objectives, and work together to produce the software required."

Where hardware is concerned, there has been a considerable degree of concentration—to the chagrin of micro-computer companies whose products have not been chosen for general use in schools. While other systems are to be found in various places, the one which seems to be preferred at present is the Research Machines 380Z.

In theory, this is likely to be superseded by the BBC system for education being developed in conjunction with Acorn.

"Electronically speaking, it's a superb design and it could be built up gradually from an initial purchase of only 500 or so. But there seem to be difficulties in producing the schools' model, and whether it'll be robust enough nobody can be sure."

Even so, the hardware is far less of a problem than the development of the necessary software and the training of large enough numbers of teachers sufficiently thoroughly to use the new development effectively.

The training would require staff to be released from the classrooms at a cost which, given the squeeze on local education authorities finances, few of them could afford, the inspector said.

Nor has the major task of software development received much of a start as yet. Money for this development is notionally included in the partly inflation-proofed £9m which the Government has earmarked over the next four years for its Microelectronics Education Programme.

But the £2.3m which has been allocated in the programme's first year has gone largely towards setting up an organisation of 14 regional centres in England, Wales and Northern Ireland, as a means of ensuring that the software is developed coherently. Very little money has been distributed to local authorities and other bodies so that they can carry forward promising programmes which already exist in embryo

Surveys in the FT on new technology

FT surveys in the coming months will be examining important developments in the area of computer-based technologies and business systems.

Satellites

Satellites are attracting increasing commercial interest as a versatile means of transmitting both communications and broadcast signals over long distances. They are expected to play a key role in the emerging information revolution, during the rest of the century.

The survey on Satellite Communications and Broadcasting will appear on March

Automated

manufacturing industry is on the verge of a massive increase in productivity through a combination of computer-based technologies and robotics. These developments will be examined in a special survey on March 3.

Electronic payment systems

Banks are looking for ways to contain excalating costs for staff and property, while remaining competitive in providing services to an ever-increasing number of customers. Retailers are seeking new ways to cut the burden of paperwork on their staff, and to speed customers: through their check-outs. Assurvey on March 31 will explain why financial institutions and retailers will inevitably move to electronic payment systems.

The electronic

office
In the past year there has been an unprecedented spate of activity as suppliers of computers, telecommunications and traditional office equipment vied with each other to launch their concept of the "electronic office," where pen and paper have given way to electronic systems. But how ready is the market for these advanced products? Is the office of the future just around the corner—or far in the future?

This survey will appear in two parts: Office Automation on April 13, and Communications on April 20.

Jason Crisp on a growth area

CAD/CAM still flying high

COMPUTER-AIDED design and manufacture (CAD/CAM) has become one of the fastest growth areas in the computer industry; 10 years ago CAD/CAM was little known but has recently attracted some of the world's largest companies.

developed for the electronics industry to help design the increasingly complex microchips and printed circuit boards. Most electronics circuits are now so complex that they would be almost impossible to design without CAD/CAM.

the CAD/CAM industry is dominated by American suppliers. A handful of independent companies grew rapidly in the U.S. through the 1970s, including Computervision, Apolicon, Calma, and Autotrol. Computervision greatly outstripped its rivals in the second half of the decade. One of the reasons for Computervision's success was its early move into supplying CAD/CAM systems for mechanical engineering.

Both the aerospace and automobile industries were quick to see the advantages of CAD/CAM. In aerospace, CAD/CAM is particularly useful in designing the highly complex surface shapes for the best aerodynamic effect while achieving the maximum strength for the minimum weight.

In the automobile industry the reduced lead times in producing a new design, the ability to simulate a collision on the computer and the opportunity to avoid expensive mistakes in the building of the prototype all helped in the rapid introduction of CAD/CAM. All volume car manufacturers now use computer-aided design. BL has one of the largest CAD/CAM systems in Britain.

Most of the independent suppliers of CAD/CAM systems have been bought by large corporations in the past two years. General Electric of the U.S. bought Calma, and Schlumberger. the giant oil services group, bought Applicon, which resulted in speculation on how long Computervision would remain McDonnell Douglas, one of the pioneering companies in the development of CAD/CAM for its own use in aerospace manufacture, sells its system to other companies. International Business Machines has a fairly small share of the CAD/CAM market, but it has

been advancing rapidly.

In Britain there are about 60 organisations—ranging from independent companies, software houses, subsidiaries of large companies to management consultants—which offer CAD services and systems.

Most are very small compared with the U.S. companies. Quest Automation, which boasts it is the largest independent European supplier of CAD/CAM systems, has recently reported a loss of £1.5m for the half year to August 1981. The main problem is its very high research and development costs combined with weak sales of its larger systems as companies defer capital investment because of high interest rates. Quest exports over half its turnover Althoropy it has substituted.

Quest exports over half its turnover. Although it has substantial sales in the Eastern bloc
it does not sell, at present, in
the U.S., which accounts for
60 per cent of the world
CAD/CAM market.
Quest has specialised in the
electronics industry but
recently hampit fearests a

Quest has specialised in the electronics industry but recently bought Genesys, a small CAD/CAM company specialising in construction and architecture, from the National Research and Development Corporation.

Racal also has a CAD/CAM subsidiary (Redac) also

Racal also has a CAD/CAM subsidiary (Redac) also specialising in supplying systems for design of electronics products which is of a distillar size to Quest.

Most of the suppliers of turn-lier CAD/CAM explanations.

Most of the suppliers of himkey CAD/CAM systems use
a minicomputer made by companies like DEC. HewlettPackard, Data General Prime
and Perkin Elmer. The most
notable exception is Computervision which has developed its own computer.
Quest also developed its own
minicomputer after finding
delivery times from its U.S.
supplier rapidly extended.
There has been considerable
concern that British manufacturers are being slow to adopt
CAD/CAM which may result.

in lower competitiveness with other countries.

is to look for this sign.

The easiest way

to buy a small business computer

The difficulties involved in buying a small business computer used to be enough to send most businessmen running back to their offices to tackle something simple like the last six months' tax returns.

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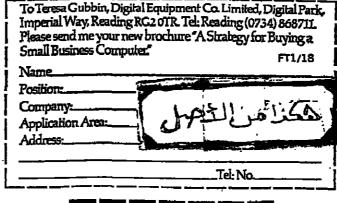
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Why De Lorean wants more

PRAYING FOR AN UPTURN

By John Griffiths

IT IS a long way from Cali of criminal misconduct and formia to Belfast, but the con- there was a shower of writs tinning slump in the US car from Mr De Lorean against market now thresters serious those involved. Among them problems for the infant De Lorean car company, and the DK Government which has backed it to the tune of £80m in cash and bank guarantees.

Six months are De Lorean's back into promisers the affair

in cash and bank guarantees.

Six months ago De Lovean's steel sports cars were selling in the US for \$10,000 above list price. Now more than 2,000 cars have yet to find a buyer, the Belfast plant has been forced to haive output and both the company and the Northern Ireland Office are praying for an upturn in the US this spring. S. this spring

This slump in U.S. demand makes all the more critical today's meeting between senior De Lorean executives and the Export Credits Guarantee De-partment (ECGD) which is the culmination of months of negotiations.

De Lorean wants \$60m to \$70m from the ECGD to help finance its steadily growing stocks of unsold cars. Its current \$30m line of credit from Bank of America is exhausted and without the extra finance it can barely afford to produce at a rate of 12,000 cars a year, let alone 20,000 which was the original target. The company still believes that a fature upturn in demand will ustify this figure.

A golden goose laying jobs in a wasteland

If the ECGD says no-and the negotiations have not been less—De Lorean can probably still make a profit producing only 40 cars a day for the indefinite future.

But Mr John De Lorean is invilling to comment on what this might mean for the compenys 2,600 workers. For them the coming of the De Lorean plant has been akin to that of a golden goose laying jobs in an memployment wasteland.

Today's meeting also follows the furore over the allegations of financial irregularities which swiftly cleared of any charges 11 per cent. For domestic manu-

and company restructuring in the summer was delayed. It would have capitalised a new holding company, De Lorean Motor Holdings at \$240m. Under this would have been grouped De Lorean Motor Company, the U.S. sales company, and De Lorean Motor Cars, the Belfast manufacturing company in which the Northern Ireland Development Agency holds a £17.757m equity stake.

There were aspects which the UK Government agencies involved, NIDA and the Northern ireland Department of Com-merce, did not like. The result of the ensuing squabble, says John De Lorean, "was that we missed the window." By autumn, with the U.S. motor industry deep in recession, potential investors in the project were showing all the enthusiasm of a vegetarian for a T-bone steak.

Bache, Halsey, Stuart Shields, the underwriters advised a more modest offering of 1m shares at severely restricted. \$12 each with warrants to buy The fact that the an equivalent amount later. too, was still-born. A third attempt was abandoned earlier this month. Mr De Lorean now accepts that it may be many months before another attempt will be made;

 Then came the allegations of irregularities. "The joint effect," Mr De Lorean told the Financial Times last week, "was a hell of a lot of order cancellations. People were saying 'why should I buy a car from a company which might not be around?';" • The U.S. new car market has also performed even worse than expected in the past few months. Sales in 1981 fell for the third year in a row to 8.53m. In the



Mr John De Lorean and the first shipment of his cars in the U.S.

severe implications for De Lorean because many of its 350 dealers have U.S. volume car franchises. De Lorean should be the cream on top of the cake. With precious little cake, their ability to finance the purchase of De Loreans has become

The fact that they have contractual commitments to buy 43,000 De Loreans under their equity participation agreements a factor sometimes overlooked in assessments of De Lorean's immediate prospects-is of little consolation.

As one U.S. industry analyst puts it, "De Lorean knows a lot better than to solve the company's liquidity problems by stuffing cars down their throats -and driving them to the wall." The downturn has worsened

since October, a month in which registrations hit a 20-year low. "In November they were run-ning at an annualised rate of In December it was 6m. The 5.8m rate in this year's first swirled round the company last sector in which the \$25,000 De 10 days are at a 30-year low," automb. The company was Loreans compete the fall was according to Mr De Lorean.

facturers it has been the worst Lorean has built 7.000 cars; turn almost certainly depends year since 1961. That has had some 4,700 have been sold to on the attitude of other governdealers; but only 3,000 regisment departments.

In the face of all this it is dilemma for the Government not surprising that De Lorean bas cash flow difficulties.

That poses a knock-on dilemma for the Government both political and financial. The Government has already the control of the contr There are other compounding a great deal of flak about the factors—the De Lorean company still complains that a £14m top in so far, even though it was a up UK Government loan granted Labour Government's signature

in 1980 should have been on the original agreement. treated half as a grant, and a To provide these fur flom claim for damage and guarantees will not necess disruption during the IRA hunger strike is still awaiting adjudication. But the crux of its problem. is that it has been feeding cars at a steady rate into a market

proving too volatile for a company just starting off. De Lorean's own estimate is that December accounts for 41 per cent of annual sales; March could be 20 per cent as the more well-heeled man's thoughts turn to spring and, maybe, De Lorean cars. Whether the ECGD decides

to play ball today will depend heavily on whether Northern Ireland development officials can convince it that De Lorean

amount of public money pumped

To provide these further guarantees will not necessarily cost more money — except in the still unlikely event of a crash-and the prospect of a reduction in jobs so soon after the plant has opened might present a less palatable alternative. But the dilemma does not end

De Loraan had hoped with its share flotation to do two things: first to start buying out the De Lorean Research Partnership, 125 early private backers of the De Lorean project whose \$151m investment currently entitles them to 23.4 per cent of profits and who are clear deterrent to further fund-raising.

The second aim was to start to get cash together for the

\$80m saloon project planned for 1984. De Lorean now claims it is vital to the company's long-term future, removing its dependence on one, exotic sports car and even—Mr De Lorean has said—holding out the prospect of lifting Belfast employment to 6,000 or more. Some £19m worth of work on

it must start this year—it is already in clay model form at Guigiaro's Ital Design studio in Turin. Some \$22m in other planned investments may be dispensable, but De Lorean feels the saloon is essential. The UK Government has indicated that it would consider more grant and loan aid for the saloon, but only if the company looked stable and was making

a profit.
To start providing that aid now would be jumping the gun in terms of the Government's own criteria and presents a more difficult decision, involving hard cash rather than guarantees.

De Lorean argues that given the high level of unemploy-ment and the peculiar problems of Ulster the true net cost to the UK Government by August of this year is not as much as the £67m in equity, loans and grants that have

actually been paid out.
Some £1.3m has already been handed back to the Government in royalty payments: £1.4m in debt servicing, £11m

Shrinkage . . would be a tragedy'

a year is pumped into the eco-nomy by employee spending, nearly £1m a year is spent on utilities—apart from invest-ment and labour to build the plant itself. Some 59 per cent of components by value are sourced in the UK, which De Lorean claims has created a further 7,500 jobs, though other analysts would put the likely multiplier closer to 1:1.

Meanwhile, John De Lorean insists that "there is no danger of the company not making it. If necessary, the operation can be cut back to the 12,000 a year level and still make profits of £14m-£15m a year on that basis. But that would mean shrinkage. and that would be a tragedy.

A new kind of competition

By Samuel Brittan

A NOVEL kind of competition four years at a time, food in

The SSRC is spending about £0.5m per annum to support four main teams: the National Institute of Economic and Social Research (NIESR), the London Business School (LBS), the Cambridge Economic Policy Group (CEPG) and the "other" Cambridge team—the Cambridge Growth Project. So far, the funds for the four teams have been allocated on an ad koc basis. Following the recommendation of an SSRC sub-committee, there is going to be an open competition for qualified applicants for the four years from September 1983.

The existing teams are all expected to reapply. In addition, the Minford Liverpool Model, which now receives a prototype (or "baby") grant, is expected to apply for full-scale funding. There will also be an applica-tion from Professor Michael Beenstock's newly formed City University Institute Economic and Financial Research (CIFER).

The NIESR and the two Cambridge groups would be regarded as Keynesian, with the Cambridge Groups being more interested in the longer term, and the Growth Project specialising in sectoral breakdown. Liverpool and CIFER would be regarded as classical (so-called "monetarist") while the LBS is seen as inbetween ("moderate monetarist").

The Keynesian groups regard output as demand determined, the monetarist ones as supply determined, and the LBS as supply determined in the long run but demand determined in the short. The povelty of CIFER is that it will study the longterm growth of output from the supply side—including the effects of public expenditure and its financing

Michael Posner, the SSRS chairman, has likened the new system to a pool where "life is brisk and the inhabitants have to work for their food; but for

is to be held in April. It is for return for work is guaranteed." Social Science Research Council (SSRC) funds between full-scale models of the British economy.

In fact, the food supply is likely to be trimmed by up to 20 per cent both because of "cuts" and economy. unit to provide common services, evaluation and a point of contact for outsiders. The com-mittee judges would be within their rights in trying to arrange some rationalisation, eg, putting the NIESR and one of the Cambridge groups together to pro-vide a Keynesian model, both short-term and long, and putting CIFER with the LBS or Liverpool for a comprehensive classical approach.

The Rothschild idea of direct contracts from interested gov-ernment departments would be a bad idea in this instance, where the most important ques-tions are not always the ones governments like asking, and where a buffer is needed to pro-tect research teams from the political and Civil Service fashions of the moment. Two-thirds of the Treasury's expiring research grant to the NIESR is being switched to the SSRC, thus ending an unhealthy symbiotic relation.

If the whole of Government, academic and private financing on macro models of all kinds is added together, it amounts to about half the cost of Brideshead Revisited. Although such models are more likely to provide "normal science" rather than intellectual breakthroughs, they are the research technique favoured by some of the most go-ahead young economists, including even the critics of conventional forecasting.

Many of the models represent the working out of the vision of one or two dominant personali-This is both inevitable and desirable in the present state of the subject.

There is thus a very strong case for continuing the workso long as it is not regarded as the whole of economics and that it is not erroneously supposed à la Jeremy Bray that Government policy can be decided by examining the technical entrails of the rival beasts.

Letters to the Editor

The dress industry and the multi-fibre arrangement

From the General Secretary, of imports of dresses from National Union of Tailors and Garment Workers

....

Sir. Workers in the clothing industry, under constant threat of losing their jobs, can surely be forgiven for sometimes wondering just what use inter-national trade agreements like the multi-fibre arrangement really are. For all too often the terms of the agreements seem to be ignored by the ex-porting countries and neither monitored nor policed by the European Commission. Scepticism will surely grow at the news of the Commission's reaction to the massive surge

Korea (January 13). During 1980 imports of such dresses totalled 202,000. For

the first nine months of 1981 however, this figure had increased by over 325 per cent to Under the basket extractor

procedures contained in the MFA, the European Community is enabled to ask for a category of garments from a single source to be put under quota where these reach a certain proportion of total imports. Having quite clearly failed to

spot the difficulties in time, the European Commission proceeded to negotiate an agreement that provided that Korea should be allowed a further 100,000 dresses to cover the period to the end of 1982. So while thousands of jobs were being lost in the dress industry

on dress imports from Korea. In the light of this ham-fisted and incompetent approach, is it any wonder that despair is rampant througout large parts of the United Kingdom clothing industry. Alec Smith.

National Union of Tailors and Garment Workers, 16, Charles Square Ni-

Sir,-The letter from the during 1981, the Brussels bureaucracy were happily signing away a 375 per cent increase subsidies whereas others can-Paris, for example.

-Management and unions should make real efforts to provide a service for the public and put aside their selfish motives which are only to preserve jobs. It is doubtful if any of the leaders of both sides ever use public transport-if they there would soon be an

Errors of etymology

etymology creeping into common use among your writers which should be remedied. It concerns the use of the word "guru" to describe certain leading figures in the financial

a guru is one who, having inner mystical or knowledge through experience within teaches a practice for attaining who come to him for guidance. He is a teacher, per se. One who has experienced spiritual transport or mystical experience but does not teach, is a noly man, a sadhu, not a guru.

is a kind of priest who gives out "wisdom" more like a relationship of a guru and his disciples. The highest—or sat with the ocean of spirit or appointed. His own self is lost in the higher self and he can make no mistakes.

A pundit, on the other hand, is self-appointed. He is liable to the human errors of egotism and vanity regarding his intelnouncements.

lectual knowledge and he can often be wrong in his pro-John H. Davidson 76 Hemingjord Road.

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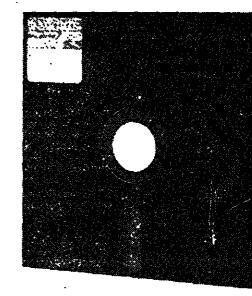
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From Mr K. McDowall. Sir.—Mr East's letter (January 3) on the ammunition provided by the self-deprecatory correspondence frequently published in this country reminds me of an occasion when with a group of Fleet Street journalist colleagues, I visited a giant industrial concern in Western Germany and inquired about competition from British rivals. An urbane executive dismissed the problem but said if all else failed there was always some help to be had from us! When pressed he produced a thick scrapbook, showing cuttings from most of our newspapersincluding quite a few plnk ones -which he said always came in handy whenever he found a customer thinking in terms of buying from a British supplier! A senior colleague of mine still working on a Fleet Street newspaper, will, I am sure, confirm this incident.

It was about the time the OE2 was on its trials and the headlines being run were that ship has been a remarkable flag-carrier for Britain, earning millions in overseas currency and though nearing the end of are willing to fight to maintain her years is still a superb advertisement for British skill.

I cannot help wondering . whether we are now screwing up the potential of the advanced passenger train. The coverage of its trials given will be of great assistance to those French salesmen who are busily trying to seek oversess customers for what is undoubtedly a good industrial achievement for them. election is being used to further Old Court Flace, WS.

But their product has had considerably more investment than the APT, which has a tremendous export potential for this country and can be used on existing track. I wonder newspaper whether many readers realise that or are more familiar with the jokes about APT's troubles on trial? K. D. McDowall, Reform Club. Pall Mall, SWI.

Scotland for the Scots

From Mr N. Kirkpatrick

Sir,-I find it ironic that as the Monopolies Commission is declaring the Royal Bank of Scotland's possible merger with a foreign banking corporation to be against the public interest, a representative sample of the Scottish electorate in Hillhead (interviewed in a System 3 noil) are willing to vote for Mr

Roy Jenkins. The Commission's decision is obviously a result of public outrage at a much respected Scottish institution passing into foreign hands. The concern shown by the Monopolies Commission for the people of Scotland seems to me misplaced if the prediction of a win for the SDP in the Hillhead by election is likely to come true. On the one hand the Scottish people their national identity, symbolised by the Royal Bank, yet on the other hand they apparently want to elect an MP who lives in London and knows litle, if anything, about Scottish affairs. He cannot there-

interests in Parliament. mean no offence to Mr Brian P. Smith. Jenkins, but I fear this by-

fore, truly represent their

the political career of one man and his party. The poll, conducted on behalf of BBC Scotland, is simply proof of the power of the media which has created the SDP and who are currently backing Mr Jenkins in the hope that he will lead the Alliance in the next Parlia-

It is my hope that the Scot-tish voters in Hillhead will realise they are being manipucan best represent their local interests rather than a media personality. A Scottish MP is surely in the public interest. Neil Kirkpatrick. 25, Lochan Avenue,

Odds on or against the weather

From Mr B. Smith Sir,-Mr David Fishlock's article (January 13) on weather forecasting confirms again the folly of daily weather forecasts to us public at large. Three questions constantly arise and

constantly get no answer. If it is impossible to predict with accuracy what the weather will be in one relatively small locality, why bother?

If it is very largely true that today's weather will persist tomorrow, can the weather men offer better odds?

Why are there no odds-on or odds against quoted by the weather men, no apologies for errors, and no direction of movement indicators on their beloved satellite pictures, which renders them meaningless? 13, Old Court House,

Transport and the public

chairman of London Transport (January 11) is typical of those who made comparisons with other countries, but fail to say that the UK cannot afford hefty

improvement!

Alan Bailey. 44 Rothesay Court, Harleyford Street, SE11.

From the Managing Director, raphic Display Systems. Sir,—There is an error o

According to Indian tradition

A better word from Indian culture for your writers to use would be "pundit." A pundit preacher than the very personal guru who has attained oneness universal consciousness or source of light within, is, according to tradition, divinely

Thos. Ward answers RTZ's revised bid and share warnings

responded on Friday to the revised bid announced by Rio Tinto-Zine on January 6. Peter Frost, Ward's chairman, reiterated his board's opposition to "this illogical bid" largely on the grounds set out on January 13 when RTZ posted its revised offer document.

Ward, advised by S. G. Warward, advised by S. G. Walf-burg, insists again that RTZ's warnings of a fall in Ward's share price—should the current bid lapse—are "reckless." A detailed comparison is made of the position of Ward's shares in mending that shareholders ignore the market with those of leading RTZ's bid and that they should competitors. On the basis of the not sell comparison and Ward's recent market. £23m forecast for 1982, share-holders are told they "need not worry about a fall."

The chairman adds, in stressing the reliability of this fore-cast, that Ward's experience so far in its current financial is fully up to expectations." RTZ's aspersions about the forecast "are irresponsible." figures in line with those now

27/28 Lovar Lane London EC3R 8EB

THOS. W. WARD formally had acknowledged expecting " just such a forecast."

RTZ's advisers, Morgan Grenfell, agreed last Thursday that the company had indeed expected a 1982 forecast of around £23m to be made by Ward—but explicitly rejected Ward's prior to the offer period suggestion that RTZ had itself Dagnell held 2,847,301 10p concurred with the forecast. ordinary shares in C.T.R. repre-Inaccurate press reports were blamed for the confusion.

Mr Frost concludes his board's considered advice" by recom-

By the close of trading on Thursday, RTZ had added again to its Ward holding picked up in the market. Morgan Grenfell disclosed on Friday that the holding now represents 35.72 per cent of Ward. The merchant bank added that it saw nothing tions." RTZ's aspersions about the forecast "are irresponsible."

His letter claims that RTZ had based its 225p per share offer on January 26, it said, this would be bound to depress Ward's share forecast by Ward and that RTZ price and keep it depressed."

Price on week div.(p) % Actual taxed

CORAL INDEX

Close 528-533 (+6)

M. J. H. Nightingale & Co. Limited

Dagnall Secs. offer for C.T.R. further extended

The unconditional offer by Dagnall Securities for the out-standing capital of C.T.R. FINAL ARRANGEMENTS are Securities at 20p a share has been further extended until 3 pm on March 24, 1982. Despatched on November 25, 1981, the offer was initially open for acceptance until 3 pm on December 16, 1981. This was extended on December 16 until 3 pm January 16. The terms and con-ditions of the extended offer are as set out in the document of

senting \$2.22 per cent of the issued capital. As at January 15, acceptances had been received in respect of 557,137 ordinary thereselves the senting of the shares representing a further 16.1 per cent.

FT Share Information

The following security has been added to the Information Service: Computer and Systems Engineer-

ing (CASE) Electricals). BARLOW HOLDINGS

The board of Barlow Holdings says the sale of 70 per cent of Barlow Plantations Son Bhd was completed on January 7. Certain aspects remain to be finalised pursuant to the contracts.

Aeronautics Board.

ECGD guarantee.

Plans in hand to raise £3m for **Bolton independent hospital**

in hand for plans to raise funds to build an independent hospital Total costs are expected to be around 13m and this sum will be financed through locally based consultants and doctors, other interested parties within the communities and banks and City institutions.

The board of directors forms a hospital management team which combines medical, surand business expertise. They expect to assue a prospectus in March giving full details of their plans.

The company's professional advisers have already arranged the successful financing of the West Yorkshire, Hertfordshire appoint a chief executive for controlling all aspects of the hospital's work.

The hospital, which include 30 beds and 2 operating theatres, will be based at a site already acquired on Chorley New Road Planning permission has already been granted and it is expected that building will commence in the first half of this year, with patients being admitted in the summer of 1983.

The hospital will be built and developed to a high specification.
A comprehensive health screening service will be available, and also physiotherapy and pathology services. In line with modern practice, accommodation said Mr Rink.

The following statement was released over the weekend by Lazard Brothers & Co., Ltd.:

Lazard Brothers & Co. Limited

wishes to comment on a report in this week's "The Economist"

which in turn summarises a report of the United States Civil

Lazard Brothers has for many years been the leading British bank

engaged in the financing of the export of aero engines from the United Kingdom to airlines in many parts of the world under credit

arrangements guaranteed by the Export Credit Guarantee

Lazard Brothers wishes to state that it has no loans outstanding to

airlines in any part of the world which are not fully covered by

Department, a U.K. Government agency.

BOARD MEETINGS

dates of board meetings to the Stock Exchange. Such meetings are usually held for the purpose of considering dividends. Official indications are not available as to whether dividends are interims are finals and the subdivisions shown below year's smetable. TODAY

Interims: Alise Investment Trust, Allied Residential, G.T. Japan Invest-ment Trust, Peerless, Restmor, Stroud Riley Drummond, Western Board Mills. will be aavailable for mother

and child when required. Mr Tony Rink, the chairman, said the board now had every and Peterborough Independent expectation that it would raise Hospitals. The board intends to the necessary finance to get this project off the ground. The medical profession in the lent" assistance in all areas of planning, plus a "marvellous" financing start having already committed £150,000 of their

own funds. The board considered that the full commitment of surgeons, doctors and the local community was critical for the success of an independent hospital outside the major city conurbations.

Many interested parties in the local community had already in-dicated a strong desire to make

U.S. company to buy video game maker

Harwyn Industries Corpora-tion said in New York that it has agreed in principle 10 acquire Summit Coin of Wales, for 1.3m Harwyn shares.

Based on Harwyn's current bid price of \$7.125 in the over-the-counter market, the transaction of the transaction is that Harwyn will have available to the combined companies at that time an additional \$10m in working capital.

Harwyn and FNI Incorporated, a publicly held company that owns and operates the Seattle owns and operates the Seattle Supersonics HBA basketball franchise and is involved in a 176-unit condominium joint venture in the Seattle area, has announced the merger of FNI into Harwyn on the condition that Harwyn successfully concludes the purchase of Summit Coin.

Harwyn is the exclusive distributor in the U.S. and all other parts of the world except the UK, Ireland and Continental

the UK, Ireland and Continental Europe of the video gaming and slot machines and amusementgame machines manufactured by Summit Coin.

SPAIN		
		Jan
1981	/82	Pric
High	Low .	%
343	251	Banco Bilbar 3
350	280	Banco Centrel 3
320	. 229	Banco Exterior 3
330	239	Benco Hispano 3
128	115	Banco Ind. Cat 1
383	284	Banco Santander 3
219.	148	Banco Urquijo 2
375	263	
252	203	Benco Zeregoza 2
165.5	82	Dragados 1
75	45	Dragados 1. Espanola Zinc
72	55	Faces
55	22	Gal. Preciedos
82.7	63.5	Hidrola 68
62.5	50	
102.5	· 70	Petroleos 92
104	70	Petroliber
102	38	Sogelise
1 102		Andause

Dates when some of the more important company dividend statements may be expected in the next few weeks are given in the following table. The dates shown are those of last year's announcements, except where the forthcoming board meetings (indicated thus*) have been officially published. It should be emphasised that dividends to be declared will not necessarily be at the amounts in the column headed "Announcement last year."

ne amounts in ti	ie column di	Sided withoutcement	mer Acar
Date		Đate .	Ansounce- : mant last : year
oc. Dairies Jan 28	year Int. 1.75	*Imperial Group Feb 11 *Lloyds BankFeb 19	Finel 4.5
Fisheries., Feb 19	Final 0.75	LonracFeb 5	Final 6.0
ioc. Paper Indslan 21 mid	Final 0.79	MarchwielFeb 19 *Mercantile	Final 3.6
QualcastFeb 18	Final nil	HouseJan 25. *NatWestFeb 23	
Am BrosFeb 26-	Int. 1.0	Notting ham ManuftgFeb 23	Final 3.0
rington Viyella, Feb 25		PleaseyFeb 25:	Final 6.0
OfficesFeb 10	•	SecuricorFeb 18 Security	
nmercial Senk AustFeb 25	lot. 10 cents	Services Feb 18 Sime Darby Feb 19 Smith Bros, Feb 19	Int. 10%
nmercial UnionFab 24		*Stock ConversionJan 20	
janFeb 18 jetyFeb 18 rtyFeb 11	int. 11.0	Tate and LyleJan 20 Trusthouse	Final 6.5
therm Intl. Jan 27	Final 3.0	ForteJan 21	
Fields SA Feb 2	Int. 125 cents Int. 2.75	DiscountJan 27 Board meeting linting	ated filights
rerFeb 23 Feb 28	Final: 2.0 Sec. int. 5.0	issue since made. 4 Ta Issue since made. 9 For	ecast.

Public W			oan P		ra	tes
			repaid		losas	A* repaid
	by EIPf		meturitys	by EiPt	- A‡	maturity
Up to 5	. 16]	161		17 <u>t</u>	17 <u>1</u>	17}
Over 5, up to 6	. 167	16 1	163	17 <u>f</u>	17	17
Over 6, up to 7	. 16	· 16ŧ	16}	171	178	17 -
Over 7, up to 8	. 16	16 7	161	17 [17# :	
Over 8, up to 9		167	``15Î	17	171	· 17 ·
over 9, up to 10		167	167	172	178	17
over 10, up to 15		164	164	171	17	161
Over 15, up to 25		. 16	16	167	16#	164
THE AP UP TO DO	. 16	7727	161	161	161	701

* Non-quota loans B are 1 per cent higher in each case than non-quota loans A. † Equal instalments of principal: ‡ Repayment by half-yearly annuity (fixed equal half-yearly payments to include principal and interest). § With half-yearly payments of interest only.

This advertisement is issued in compliance with the requirements of The Council of The Stock Exchange and is not an invitation to any person to subscribe for or to purchase any share capital or other security of the Company.

Anglo American Industrial Corporation Limited

1,000,000 5.625 per cent cumulative first

preference shares of R2 each

The Council of The Stock Exchange has admitted the 5.625 per cent cumulative first preference shares in Anglo American Industrial Corporation Limited to the Official List.

Particulars of the shares are available in the Extel Statistical Service and copies of such particulars may be obtained during business hours on any weekday (Saturdays excepted) up to and including 1 February 1982 from:-

Charter Consolidated P.L.C. 40 Holborn Viaduct London EC1P1AJ

Rowe & Pitman City-Gate House 39-45 Finsbury Square London EC2A 1JA

18 January 1982

This announcement appears as a matter of record only.

THE TRING HALL

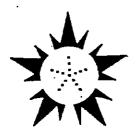
USM INDEX

114.3 (+0.2)

close of business 15/1/82

BASE DATE 10/11/80 100

Tel: 01-638 1591



December 1981

OFFICE CHERIFIEN DES **PHOSPHATES**

US \$175,000,000 Medium Term Loan

Unconditionally Guaranteed by

THE KINGDOM OF MOROCCO

Arranged by

BANQUE MAROCAINE du COMMERCE EXTÉRIEUR **GULF INTERNATIONAL BANK** B.S.C.

Managed and Provided by

BANKERS TRUST COMPANY CRÉDIT AGRICOLE SOCIÉTÉ GÉNÉRALE

BANQUE NATIONALE de PARIS GULF INTERNATIONAL BANK B.S.C.

BANQUE ARABE et INTERNATIONALE THE CHASE MANHATTAN BANK. N.A. d'investissement (b.all.) **EUROPEAN ARAB BANK GROUP** CRÉDIT LYONNAIS THE SUMITOMO BANK, LIMITED

ARAB BANKING CORPORATION (A.B.C.) BANCO EXTÉRIOR DE ESPAÑA BANK BUMIPUTRA MALAYSIA BERHAD CRÉDIT COMMERCIAL DE FRANCE LIBYAN ARAB FOREIGN BANK

ARAB BANK FOR INVESTMENT & FOREIGN TRADE, (A.R.B.LF.T.) ABU DHABI BANK OF BAHRAIN AND KUWAIT B.S.C. BANQUE MAROCAINE du COMMERCE EXTÉRIEUR KUWAIT FOREIGN TRADING CONTRACTING & INVESTMENT CO. (S.A.K.) NATIONAL BANK OF ABU DHABI



Agent

GULF INTERNATIONAL BANK B.S.C.



15th January, 1982.







MIAQ

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To the shareholders of

Thos.W. Ward

THERE IS EVERY REASON TO REJECT RTZ'S BID AND RETAIN YOUR WARD SHARES

- A prospective dividend yield of 7.0% and a price-earnings multiple of 7.4 times can support a market price of 225p for Ward shares on their own merits. As a bid price 225p is unacceptable.
- Ward's construction interests alone are worth 265p per Ward share to RTZ.
- RTZ have still not had the confidence to say 225p is their final bid and have left open a means under the Take-over Code to increase it.

This advertisement is published by S. G. Warburg & Co. Ltd. on behalf of Thos. W. Ward p.L.c. The directors of Thos. W. Ward p.l.c. (including those who have delegated detailed supervision of this advertisement) have taken all reasonable care to ensure that the facts stated and opinions expressed herein are fair and accurate and each of the directors accepts responsibility accordingly.

CREDITS

Companies and Markets

Shaved margins hint of better status for Brazil

TENTATIVE INDICATIONS of lending limits are being watched years rising to 1 per cent thereeasier conditions for one of the increasingly closely

Eurocredit marker's biggest Another credit launched lest to be Credit Commercial de interest last week as no fewer would be buyers grasping vainly a much higher courson—was borrowers emerged last week week after a long gestation France. with the announcement of terms period was the U.S.\$1.25bn, 15-Roma for a \$125m, eight-year credit year deal for the Eraring Power for Brazil's development bank Station in New South Wales.

of 21 per cent, but the normal 2 per cent margin over U.S. prime rate has been shaved to only 11 per cent. Chase Manhattan, which has had the operation on the drawing board for some time, will be agent for

Its launch now, however, gives the credit something of a enchmerk status for Brazilian deals at the start of 1982, appearing to confirm the view one segment of the market that margins for the Brazilian public sector could be heading iebily lower.

Some bankers have been saying since last summer that margins on Brazilian credits should drop because of the country's success in improving its visible trade accounts.

that the size of its foreign bor-rowing requirements is daunting. On its own admission Brazil has to berrow another \$14bn this year on top of the \$16bn it raised abroad in 1981—and per cent for the first three

BNDE. This is being arranged by the The credit bears a standard Bank of New South Wates and margin over Eurodollar rates Salomon Brothers and bears a margin of 1 per cent over Lon-don inter-bank offered rate (Libor) for the first five years (Libor) for the first five years undertaken to keep them strictly rising in stages thereafter to a confidential but indications from per cent and finally to ! per cent for the last five.

The funds will be used by a sector Australian partnership to purchase the Eraring power station from the State electricity commission. In Australian currency the loan amounts to some A\$1.1bn while the balance of the A\$1.65bn purchase price will be found through equity finance in the partnership and further borrowing either domestically or externally.

The City of Madrid seems, meanwhile, to have solved the political problems delaying its long-awaited Eurocredit. A man-But others still argue strongly date was reported to be imminent last Friday for a \$50m, 10-year credit guaranteed by ICO, the Spanish state financing concern.

Terms include a margin of 1

Romania will resume its debt discussions with international banks this week after a first round of talks held amid conditions of tight secrecy in Bucharest last Tuesday.

Banks which participated in the talks are understood to have the talks suggested that Romania will seek some form of orderly breathing space in its repayment schedule to Western banks and other creditors.

As expected the rescheduling talks on Poland and Costa Rica last week produced little DIOETESS. Poland has confirmed its desire to sign a rescheduling

agreement with commercial banks but is still seriously behind with outstanding interest Cost Rica also faces serious problems with interest payments

and government officials spent most of last week's meeting in Miami trying to convince bank not available to meet a pro-jected \$225m interest bill this

Peter Montagnon

INTERNATIONAL BONDS

Fashion for zero coupons may prove shortlived

than seven zero coupon bonds were offered in the Euromarket.

for General Motors Acceptance Corp (GMAC). Issuing activity picked up steadily in each of the ensuing days so that on Friday alone three more issues were launched — for Beneficial Finance, Caterpillar Tractor and a second helping for GMAC.

Zero coupon bonds are always priced at a very deep discount because they bear no interest and consequently offer prospects of a substantial capital gain, which is especially attractive to investors located in centres where such profits are exempt from taxation.

The mystery confounding the market, however, was where these investors were located. There was some evidence that much of the zero coupon paper was being placed in Japan, pos-Miami trying to convince bank sibly because anticipated creditors that funds are simply changes in the tax laws make them particularly attractive to Japanése investors .at

Salomon intrigued traders drawn because of market con-

would-be buyers grasping vainly a much higher coupon-was after a slice of the action.

As a result, a mood of pent-up As a result, a mood of pent-up demand was created, in which a modest way by Salomon the fashion snowballed, yet Brothers on Tuesday with the fashions in the Euromarkets announcement of a \$250m issue have a way of changing almost as soon as they appear, and by Friday signs were emerging that the amount of paper on offer might become too great for the market to absorb.

> The secret of the success of the early issues in particular was that issue managers had discovered pockets of demand in Japan, and probably in some offshore centres too. Yet even if it continues, such demand will not necessarily remain general and there is always the risk that the experiment will be overdone.

> This hard lesson was learned in the Canadian dollar sector last week, where demand for high coupon issues from retail investors in Europe has prompted a flurry of new issue activity since Christmas.

By Friday, however, this sector too was becoming satur- foreign ated and one issue, a C\$50m, weaker 16) per cent bond for Canadian Pacific Enterprises, was with-

nonetheless increased to C\$30m from C\$25m

Once again there were no conventional fixed rate Eurodollar issues last week as the secondary market continued to languish under the impact of short-term rate movements and the poor performance of the New York bond market.

Seasoned issues shed a point on the week and six-month Eurodollar rates advanced point to 15 per cent.

But another issue with warrants to purchase stock was announced for a Japanese borrower. C. Itoh is raising \$50m in this way through Nikko Securities and Morgan

Japanese issues were also firmly in evidence in the Swiss Franc market where new issu ing activity continues at a rapid pace despite a a fall in secondary market prices last week.

German banks announced another large calendar of foreign issues despite the foreign issues despite the weaker bond market where foreign issues shed ! point.

Bay. Vereinsbank

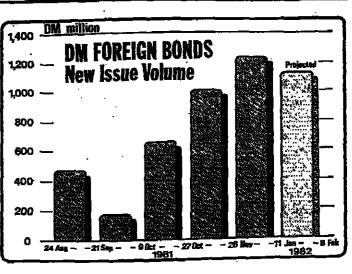
UBS, SBC, CS

Kredietbank

Daiwa Secs.

KFTCIC, Credit Lyonnais *

Peter Montagnon



GERMAN BONDS

Bundesbank fights dollar disease

stationing of a few more armed guards at the well-defended entrance to its headquarters for the Bundesbank, West Germany's Central Bank, to fend off the political onslaught which it is likely to face in the next

The German capital markets last week caught another case of dollar disease. As interest rates in the U.S. rose and fears of Federal Reserve tightening spread, rates in the German capital began to shift higher The Central Bank, which had been struggling vainly to get money market rates down to about 10 per cent through open market operations, suddenly found itself fighting to stop them surging over the 101 per cent level at which the "special Lombard" was fixed at the

beginning of December. Worse, even long-term interest rates began to rise. The Federal Railways' DM 900m bond issue, which at the beginning of the week was expected to come with a 9½ per cent coupon, surfaced on Thursday with a 10 per cent coupon and a yield of 9.92 per cent. At the shorter end of the credit market, yields rose by as much as half a percentage point. On Friday, dealers reported that the railways loan was selling reasonably well, but the Central Bank had already indicated that forces lined up against it, howit would support prices by buy-

ing heavily in the market. currency outflows, partly due to that prospect, however. renewed foreign borrowing in domestic markets and, since the

IT WILL require more than the imposition of martial law in Poland, the political chimate has taken a turn for the worse.

> All this reduces the Bundesbank's scope for lowering the Lombard rate. Yet the Bonn coalition Government has been inching towards measures to fight unemployment, in the face of the threat that the jobless total could soon hit 2m, and an interest rate cut is widely considered to be a vital component of any such plan. Deutche Bank's co-chairman, Dr Wilfried Guth, went out of his way last Thursday to express public support for the Central Bank's monetary policy. But outside the parliamentary opposition, Herr Karl-Otto Poehl, the Bundesbank chief, and his colleagues are hard-pressed to find much support for a continued tough monetary stance, and they fear being saddled with the

blame for the slump.
The bundesbank feels that a Government stimulation programme could undermine confidence in the capital markets. It worries that any substantial easing of monetary policy now would only store up trouble for the future. It is conscious, too, that the unions have yet to settle the 1982 wage round; the moment is tactically wrong to show any sign of weakening.

As it looks at the political

ever, the Central Bank may well be hoping that by the time that For the Bundesbank the final decisions on a programme latest signs of an increase in are taken, the international U.S. rates, and perhaps some situation will have eased enough tightening of Fed policy, could to permit at least a token cut scarcely be less welcome. The in the Lombard rate to 10 per D-Mark has come under cent. The German bond market renewed pressure, there are net is not going to jump for joy at

Stewart Fleming

CURRENT INTERNATIONAL BOND ISSUES

	Borrowers	Amount- m.	Maturity	Av. life years	Coupon	Price	Lead manager	Offer yield %	Borrowers .	Amount m.	Maturity		Coupon
. :	U.S. DOLLARS Microbishi Chemical?		2000	- !-	·		M Carrier		D-MARKS			_	
	Pilowbii Chemicali	50	3987		77	· 700	Morgan Stanley Yamaichi	11.000	Austria**‡	75	1989	7	93
٦.	Minorco§1	60	1977	15	. al	100	Hambros	9.464	Austria**‡	75	1987	5	• 93
	Orient Financest	- 60	1977	15	27	700	Nomura Inti-	5.319	Swed. Export Credit**!	50	1989	<u>. </u>	75
. ;	Nippon Electric§	80	1997	15	. 47	100	Daiwa Europe	•	SWISS FRANCS	_	•		
	Hitachi Cable§	40	1996	15	#	100	Nomura Inti-	•	Nihon Radiator**§1	40	1987		53
	Toloru Corp.§	30	1997	15	•	: 100	Yamaichi, Schroder		EIB‡	100	1992		71
- '							Wagg'	•	World Bank**‡	300	1988	_	74
	C. Itoh	50.	1988	6		. 100	Nikko Secs, Morgan		NTT	100	1992	_	• • •
	The same of the sa						Guaranty	•	Nissan Motors**§	200	1987	_	*
	GMAC1	. 250 .	. 1992	- 30	0	_ 25 <u>\</u>	Salomon Bros.	14.750	Mitsubishi Rayon**§‡	60	1987' -		5}
	GMACT	150	1990	8	0	34	Salomon Bros.	14.440	Showa Line**§	50	1987	_	•
	ARCO1	500	1992	10	° O	251	Salomon Bros., Merrill		Standard Bank Import Ex	opert			
•	3. 真体,1963年,1973年					٠.	Lynch	14.53	Financing Co.**‡	50	7 9 85	· —	8
-	Pepsico‡	700	· 1992 .	10:	. 0	. 26	Morgan Stanley	14.420					
	Wells Fargo	125	1988	. 6.	0	44.A	Morgan Stanley, Daiwa	14.490	EUAs			-1	753
_	Caterpillar Tractor:	300	1992 .	70	. 0	24	Goldman Sachs	14.560	Copenhagen	12	1992	6 }	123
7	Beneficial Ovs. Fin.1 ·	150	1990	8	. 0	32,7	Blyth Eastman Paine		YEN		•	•	
	1的数数 はいしゅんしか		• .	· ·			Webber, Merrill Lynch	15,000 .	Forsmarks Kraftgrupp‡	20bn	1994	10.32	8.4
	CANADIAN DOLLAR	S		; 									
	GMACI	50	1989	7	16 1	100	Morgan Stanley	16.500	KUWAITI DINARS	_		_	
.!	Montreal SchoolsI	30	-1 987 ·	- 5 .	. 17-{	70G	Merrill Lynch	17.500	Charbonnages de France	7	198 9	7	11}
1	iki ya Tangan sayan kasala sa kabina sa kabina	-1-1	-: .		•	Not yet p	riced. ‡ Final terms. ** F	Placement. † Fi rities and Excha ilso be sold on	loating rate note. 9 Minimu nge Commission. 9 Purchas an FRN basis.		vertible.		

In 1981 we managed or co-managed 54 issues in the Euromarket totalling more than \$4.3 billion.

Abitibi-Price Inc. US \$50,000,000 15%% Series I Debentures Bank of Montreal US \$150,000,000 164% Debentures Series

Rank of Montrea US \$125,000,000 Floating Rate Debentures due 1991 The Bank of Nova Scotia US \$25,000,000 151/2% Deposit Notes due

The Rank of Nova Scotia US\$100,000,000 Floating Rate Debentures

ES

Banque Nationale de Paris US \$225,000,000 Floating Rate Notes due Canadian Imperial Bank of Commerce US\$185,000,000 144% Deposit Notes due

Canadian Imperial Bank of Commerce Can \$75,000,000 154% Debentures due Canadian National Kailway Company US \$100,000,000 14%% Notes due 1991

Canadian Pacific Securities Limited Can \$40,000,000 17%% Guaranteed Notes due 1987 Canadian Utilities Limited Can \$50,000,000 17% Debentures Series

1981 due 1996 Citicorp Overseas Finance Corporation Limited

US \$175,000,000 151/2% Guarantsed Notes due 1984 Citicorp Overseas Finance Corporation NV US \$150,000,000 16%% Guaranteed Notes

The City of Winnipeg US \$50,000,000 154% Debentures due

The City of Winnipeg US \$50,000,000 17% Debentures due 1986 CSWI International Finance NV US \$15,000,000 9% Convertible Subordinated Guaranteed Debentures due Cummins Overseas Finance NV US \$50,000,000 151/2% Guaranteed Notes

Daiwa Securities Co Ltd US \$50,000,000 51/2% Convertible Bonds due 1996 US \$65,000,000 131/2% Debentures due

LJS \$50,000,000 13¼% Notes due 1986

European Coal & Steel Community US \$40,000,000 14% Bonds due 1988 European Investment Bank US \$100,000,000 16%% Bonds due 1991 The Federal Business Development Bank Can \$40,000,000 174% Notes due 1986

The Federal Business Development Bank US \$40,000,000 15%% Notes due 1984 GMAC Canada Limited Can \$60,000,000 18% Guaranteed Notes GMAC Overseas Finance Corporation NV US \$300,000,000 161/2% Guaranteed Notes

GMAC Overseas Finance Corporation NV US \$100,000,000 14%% Notes due 1987 Genossenschaftliche Zentralbank Aktiengesellschaft US \$50,000,000 Floating Rate

Subordinated Notes due 1992 Genstar Limited US \$50,000,000 14%% Debentures due

Genstar Corporation
US \$75,000,000 171/2% Debentures due US \$50,000,000 15 1/2% Debentures due

Lafarge Coppee US \$40,000,000 151/2% Bonds due 1989 Municipal Finance Authority of British Columbia US \$54,000,000 Bonds Retractable at Holder's Option in 1985, 1989, 1993 due

National Bank of Canada US \$40,000,000 151/4% Deposit Notes due 1984

US \$100,909,600 13%% Bearer Bonds due Ontario Hydro US \$150,000,000 16% Bearer Bonds due

In addition, we participated in more than 250 Eurobond issues denominated in various

currencies including US dollars, Canadian dollars, pounds Sterling, Deutsche marks, French francs, Japanese yen, Dutch florins and Norwegian kroner.

Wood Gundy Limited

Ontario Hydro US \$200,000,000 16% Bearer Bonds due

GUNDY

PanCanadian Petroleum Limited Can \$65,000,000 16½% Debentures due 1988 Petro-Lewis International Finance NV

US \$20,000,000 9% Guaranteed Oil-Indexed Notes due 1986 Province of Nova Scotia US \$75,000,000 15% Debentures due 1991 Province of Saskatchewan US \$100,000,000 161/4% Notes due 1988 Quebec Urban Community Can \$20,000,000 16%% Bonds due 1986

The Royal Bank of Canada US \$100,000,000 14% Deposit Notes due Can \$40,000,000 17¼% Secured Notes Series AO due 1986

Scotland International Finance BV US \$100,000,000 Guaranteed Floating Rate Shell Canada Limited US \$190,000,000 15%% Debentures due

Simpsons-Sears Acceptance Company Limited US\$40,000,000 17%% Secured Debentures

Société d'Hypothèque Procan Can \$35,000,000 174% Notes due 1986

Société Nationale des Chemins de Fer Français US \$25,000,000 13% Bonds due 1991 Tipco Finance NV US \$30,000,000 81/4% Convertible

Subordinated Debentures due 1996 TransCanada Pipelines Limited US \$100,000,000 16% Annual Coupon

TransCanada Pipelines Limited US \$75,000,000 17%% Notes due 1988 Tribune Company Overseas Finance NV US\$50,000,000 14% Guaranteed Notes due

Union Carbide Canada Limited Can \$50,000,000 16% Debentures due 1989 **Imasco Limited** (Incorporated under the laws of Canada)

This announcement appears as a matter of record only

U.S. \$50,000,000

15½% Debentures due January, 1989

Issue Price 991/2% (less accrued interest to January 15, 1982)

Wood Gundy Limited

Goldman Sachs International Corp.

Greenshields Incorporated

Banque Nationale de Paris Orion Royal Bank Limited

Credit Suisse First Boston Limited Swiss Bank Corporation International Limited

Union Bank of Switzerland (Securities) Limited

Algemene Bank Nederland N.V. Al-Mal Group Alahli Bank of Kuwait K.S.C. Banca del Gottardo Amhold and S. Bleichroeder, Inc. Bank of America International Banca Nazionale del Lavoro Bank Heusser & Cie AG Bank Gutzwiller, Kurz, Bungener (Overseas) Bank Leu International Ltd. Bank Mees & Hope NV Bankhaus Hermann Lampe Banque de Neuflize, Schlumberger, Mallet Banque Internationale à Luxembourg S.A. Bayerische Hypotheken- und Wechsel-Bank Banque Worms Breisach Pinschof Schoeller Bankommanifippseller Chemical Bank International Group County Bank Citicorp International Group Continental Illinois Crédit Industriel et Commercial Creditanstalt-Bankverein Daiwa Europe Dominion Securities Ames Deutsche Girozentrale

Deutsche Kommunalbank-Drexel Burnham Lambert European Banking Company Limited Genossenschaftliche Zentralbank AG Vienna Handelsbank N.W. (Overseas) Limited Hessische Landesbank Japan International Bank Limited Kidder, Peabody International LTCB International

N.M. Rothschild & Sons N.Y. Slavenburg's Bank

S.C. Warburg & Co. Ltd.

January 1982

Morgan Grenfell & Co. Morgan Guaranty Ltd The Nikko Securities Co., (Europe) Ltd. Sal Oppenheim jr. & Cie. Renouf International (N.Z.) Rea Brothers Salomon Brothers International J. Henry Schroder Wagg & Co.

Smith Barney, Harris Upham International Société Séquanaise de Banque

Fuji International Finance Gefina International Girozentrale und Bank der österreichischen Sparkassen Aktienessellschaft Hambros Bank The Hongkong Bank Group E.F. Hutton International Inc. Kleinwort, Benson Lehman Brothers Kuhn Loeb McLeod Young Weir International Mitsubishi Bank (Europe) S.A. Morgan Stanley International R. Nivison & Co. Nomura International Pierson, Heldring & Pierson N.V. Richardson Securities of Canada (U.K.) Sanwa Bank (Underwriters)

Amro International

Banca della Svizzera Italiana

Bank Julius Baer International

Banque de Paris et des Pays-Bas

Christiania Bank og Kreditkasse

Crédit Commercial de France

Richard Daus & Co. Bankiers

Dresdner Bank

Banque Générale du Luxembourg S.A.

Berliner Handels- und Frankfurter Bank

Bank Brussel Lambert N.V.

Société Générale Standard Chartered Merchant Bank J. Vontobel & Co.

Skandinaviska Enskilda Banken

Offices in principal cities across

January 1982

Canada and in New York, London, Tokyo and Paris

Lévesque, Beaubien Inc. Merck, Finck & Co. Samuel Montagu & Co. Nesbitt, Thomson Norddeutsche Landesbank Pitfield Mackay Ross

Schröder, Münchmeyer, Hengst & Co. Société Générale de Banque S.A. Strauss, Tumbull & Co.

Svenska Handelsbanken

Merrill Lynch International & Co.

Vereins- und Westbank Westdeutsche Landesbank Girozentrale

Manufacturers Hanover

Midland Doherty

Westfalenbank

U.S. BONDS

Widespread gloom over jump in money supply

THE SHOCK of a \$9.8bn in- others are far from sure. crease in the money supply. M1, on Friday, capped what had for the resumption of trading today. Bond prices slumped as the news came out, and ripples reached into the foreign exchange and gold markets.

Some traders thought the reaction overdone. But even if a technical rebound brings prices up again today. Wall Street wants to see large declines in M1 in the next few weeks to "wash out" the bulge and get monetary growth back on track.

The jump was widely pre-icted because the figures covered the new year holiday week when the unusually early timing of social security payments left extra large sums in the banking system. But the consensus forecast was for a rise of about \$5bn. The jump also came on top of the upward trend in money growth that started in December, and pushed M1 way above the target set by the Federal Reserve. Over the latest statistical the measure has grown at a 10.1 per cent annual rate compared to the 2.5 to 5.5 per cent official target.

Wall Street is now desperately worried that the Fed will be forced to respond to the surge by tightening credit Whether the Fed itself is as alarmed by events is a matter of conjecture. It must have expected money growth to accelerate as a result of the easier stance it adopted briefly last autumn. But it may prefer to see how the bulge behaves in the coming weeks before taking any action. Certainly the weakness of the economy (confirmed by the 2.1 per cent drop in industrial production in December reported last Friday) creates something of a dilemma. Although some economists claim the recovery is in sight.

Fears about the money supply dominated the market's mood already been a tough week for all week, though ironically the Wall Street, and set a bad tone gloom lightened a bit in midweek as the consensus grew

The fears came through strongest in the bond market where prices sank by several points in all sectors. (Short rates were little changed, though jumpy.) The beliwether long treasury bond (14 per cent to 2011) which was issued at par last November hit a low of 96, where it yielded close on 14.50 per cent. Corporate bonds also fared badly, specially in the utility sector which dominated by debt issued by AT & T, whose fortunes have changed dramatically as a result of the settlement of its

system will probably emerge in good financial shape, the 22 operating companies which provide local service and must be spun off. will lose the AT & T umbrella. These subsidiaries account for some \$39bn of the total \$47bn of AT &T debt outstanding. All but two are triple A credits exceptions are England Telephone which is AA and Pacific Telephone which is A). But all will be reviewed by the New York credit rating agencies in light of the divestiture terms, and could be down-

graded. With interest rates now back near their 1980 highs, borrowing has dried up again, and multinationals have gone to slake their credit thirst in the Euromarkets. As usual, the upcoming borrowing calendar is bursting with new issues. But most have been there for weeks. and few are expected to come to market until interest rate

David Lascelles

Mobil retail unit to cut workforce MOBIL's Montgomery Ward be reassigned to new posi-

subsidiary said about 1,100 department store jobs will be cut as part of its previously restructuring

The retail chain said as many people as possible will that the M1 increase might be quite moderate.

anti-trust case While the parent of the Bell

About three jobs are being eliminated at each of the chain's 360 stores, although the larger stores will lose more positions. In the Chicago district's 19 stores, the

LANDMARK LABOUR CONTRACT

Ford follows Japanese example

BY IAN HARGREAVES IN NEW YORK

as if something close to panic has set in at the Ford Motor

Within a week the company for the first time dropped a quarterly dividend to shareholders, and opened at a breathless pace negotiations with the United Auto Workers union aimed at tearing up an existing three-year pay contract and replacing it with something less expensive.

A few days before that Ford, faced with a disastrous 151-day U.S. stockpile—60 days is normal-of its much-praised Escort-Lynx world car, started to offer two years' free maintenance and a 5 per cent price cut in an effort to revive sales.

The HS motor industry having lost \$5bn in the past two years, simply cannot afford to pay shareholders dividends, or to pay its shop floor workers \$20 an hour when Japan is paying \$12 an hour. The recession has made it politically possible to act upon these obvious truths.

Meanwhile. Mr Philip Cald-

chairman, is clinging grimly to changing forever the adversarial Topaz in the spring of 1983, his central plan for overhauling labour bargaining landscape of Ford will not have an all new the group's product line. He got the board to reaffirm last week that \$3.5bn will be spent on modernisation in 1982, up from \$2.5bn last year. This, at the end of a two-year period in which Ford has lost almost \$2.5bn. is no mere routine matifer.

The picture at Ford is thus an unusually muddy mixture of short and long term factors. The dividend cut, which will save about \$150m this year, is both a cash conservation measure and a useful negotiating point with the union. The new contract, which might reduce Ford's \$6bn

cent, is a cash conserver as well as a device which might wipe out between \$2 and \$4 of the labour cost disadvantage with But by taking the first cautious steps towards direct

annual U.S. wage bill by 10 per

profit sharing for shop floor workers and by offering them firm job security commitments the Ford contract may in the long term

FROM THE OUTSIDE, it looks well, Ford's dogged, methodical be seen as a landmark in because until the launch of the Detroit. The Ford deal is front-wheel drive car in the labour contract on the Japanese model.

> The discounts on the Escort-Lynx are more worrying in the sense that they illustrate the complete failure of Detroit's massively promoted "import fighters" in the battle against Japanese cars. Import penetra-tion of the U.S. car market has not dropped by a single percentage point in the past year. In December it actually started to

This year Ford will have the capacity to produce in North America.

America almost 1m Escort-Lynxes. Last year, with lower capacity, Ford sold less than half a million. With the outlook for the market as gloomy as it could be. Ford is facing the prospect of seeing much of this expensive new plant lying idle in 1982.

even better-and especially so

being described in Detroit as a larger compact range, where Japanese competition is less formidable but where General Motors is a power house. This is a severe handicap at a time when slackening petrol prices have again started to quicken the market for larger cars.

> Nothing about Ford's product offering in 1982 suggests that its 16 per cent market share will improve. With the overall market forecast to be only 9.5m cars (as opposed to 8.5m last year). Ford appears likely to go on losing money in North

The company's saving grace

is its long-term financial strength. Ford ended the year with no bank debt, just over \$2bn in long term debts and almost \$8bn in shareholders' equity. In other words, Ford still has a lot of borrowing power so long as lenders con-In short, the Escort-Lynx may tinue to take the view that the be Ford's most successful car company's so-called "comeback ever, yet in the U.S. it has to do cars"—the Escort and the Topaz -will enable it to do just that Amsterdam bourse to start unlisted securities market

BY CHARLES BATCHELOR IN AMSTERDAM

later this month start a parafiel ture, will be treated flexibly. market on similar lines to the unlisted securities market in absorb the existing over-thecounter market

The parallel market will begin operations on January 28 and is intended to make it easier for companies not listed on the stock exchange to raise funds. It is hoped the parallel market will act as a "stepping stone" for companies to the official exchange. The demands made of com-

panies listed on the parallel market are lighter than those applied to those quoted on the bourse proper. Parallel market companies need list only 10 per cent of their entire capital, compared with 100 per cent on the bourse. This would allow familyowned companies to retain control of their business. The minimum capital requirement will be Fl 2.5m (\$1m) as on the bourse, but companies acting as official mortgage banks or consultants, occurs.

THE AMSTERDAM bourse will with a different capital strik-Companies will generally be expected to provide the same London. The new market will information to shereholders but the form in which this informa-tion is provided may be simpler and thus cheaper. Charges to companies for a listing will also

The parallel market will list what are known as official and unofficial securities. The trading rules applied to both are the same but the unofficial securities will not have to meet the same initial requirements to obtain a listing.

Trading will take place on the stock exchange floor during normal bourse hours, with the two brokers who currently manage the over-the-counter market Broekman's Commissiebank and D.W. Brand, acting as specialists for the parallel market.

-The bourse will publish prices and trading volumes of official stocks daily and of the mo-official stocks when trading

INTERNATIONAL APPOINTMENTS

Changes at Champion Spark Plug based in London.

CHAMPION SPARK PLUG EUROPE, has announced a reorganisation in its European management structure will now be as follows: Mr Bjorn Gillberg -director of marketing-Europe, Mr William Graham-director of finance—Europe, Mr William Wilkle-managing director-UK operations, Mr Annibale Frattini -managing director-Italian operations, Mr Sidney Allen-—director of manufacturing— Europe and Mr Jacques Bronchart—director of engineering-Europe. Smlth—managing

Belgian operations, Mr David J. HENRY SCHRODER COR-PORATION has appointed Mr Jeffrey Collinson, head of the mergers and acquisitions and domestic corporate advisory serchairman, Hutheesing, formerly respon-sible for international corporate advisory services and project finance, has become vice-chairman. Both positions are newly created and are intended

firm and expand its share of existing markets. The company is the investment bank subsidiary of Schröders Inc. the New York-based holding com-pany of the Schröder Group

• Mr Per Boman, executive vicepresident, has been appointed head of DET NORSKE VERITAS industrial and offshore division from March 1. • CONTINENTAL GUMMI-WERKE states that Herr Helmut Werner will lead the Conti/

Englebert Group in succession to Dr Hahn who joins Volkswagen as president early in 1982. Herr Albert Englebert has retired as president of Uniroyal Englebert Tyres, but remains on the board of Continental Gummi-Werke. • Mr William C. Douce has been elected chairman and chief executive of PHILLIPS PETROLEUM COMPANY and

Mr C. J. Silas has been made president and chief operating officer from April 1. The Phillips board also elected Mr Silas, Mr Glen A. Cox and Mr R. G. Wallace as directors and members of the executive committee. Mr chairman of the board on April 1. Mr Douce, president and chief executive officer, will succeed the chairman Mr W. F. Martin when states that Mr James D. S. Innes

since 1974. Mr Silas is an executive vice president with responsibility for the company's three resource groups—exploration and production gas and gas liquids and minerals.

OSCHERING - PLOUGH
CORPORATION states that Mr
Robert P. Luciano will become chief executive officer on February 1. Mr Luciano, who Richard J. Bennett, who continues as chairman. Mr Michael J. Lodge, president

of Pakhoed USA Inc of Houston,

has been appointed to the board of the parent PAKHOED HOLDING company, Rotterdam, as a deputy director. He remains chief executive of Pakhoed's American division. • Mr Kenneth Johnson has joined the board of DUNLOP INTERNATIONAL, Zurich. been appointed president direc-teur general of PENTAX FRANCE, a newly established subsidiary of Asahi Optical Company of Japan. Mr Dingley was managing director of Pentax UK and will continue with his marketing and distribution in

he retires at the end of March. has joined as vice-president • Mr Donald J. Auriemma has

marketing, Latin America. He will be responsible for the marketing and sales in that area of the products of Matthew Gloag and Son, Perth, and Lang Brothers, Glasgow. He will be based in Buenos Aires, Argentina.

CZAR RESOURCES LTD

and its wholly-owned U.S. subsidiary Czar Resources Inc have made the following changes. The board has been expanded to include Bonita O. Rawlyck who is Czar's senior vice-president, finance, and chief financial officer, and Mr Brian C. Bentz, vice-president of H. A. Simons (International), of Vancouver, Czar's operations in the U.S.

will be handled by Mr John A. Habbishaw, vice-president and general manager, Czar Resources Inc, and Mr J. Michael Gatlin. vice-president and assistant general manager. In Canada, Mr Anthony D. Convey has been promoted to

vice-president, Canadian opera-tions, Czar Resources Ltd. to handle the daily operations of exploration and Mr P. Richard Canadiau development. Ewacha has been promoted to manager, engineering, and Sharon P. Runge has been promoted to the position of treasurer.

joined EUROPEAN AMERICAN Europe, Africa and the Middle branch banking division. Mr Auriemma heads the bank's credit services group and is re-sponsible for all consumer lend-Or John H. Dyer, director of

Ansul Central Technical Services, has been appointed chairman of the PANEL FOR FIRE RESEARCH, one of the evaluation panels for the National Bureau of Standards. Dr Dyer will serve in this position until June 30 1984. The appointment is made by the National Academy of Sciences. Mr B. J. H. S. Feilzer, director

and vice-president of WALTER
E. HELLER OVERSEAS CORPORATION, has been appointed senior vice-president. Waiter E. Heller Overseas Corporation is a wholly-owned subsidiary of Walter E. Heller International Corporation, Chicago.

BANK OF MONTREAL has appointed Mr John D. Topley, vice-president and district

executive, banks-Latin America

• FLEXI-VAN CORPORATION vice-presidents. Mr Hotchkies was the operations head of Flexi-Van cargo container and trailer leasing business in

East - areas which he will continue to supervise slong with the new responsibility for mar-keing Flexi-Van's container leasing services. Mr Reidelberger ing, including the bank's credit established Flexi-Van offices in card operations.

Asia in 1974 and since then has been responsible for the company's container leasing opera-tions in Asia. He will be responsible for all intermodal operations in the Pacific. Mr Richard Donegan, a

General Electric Company senior vice-president and group executive will become president and chief executive officer of VENDO COMPANY on March 1. He will succeed Mr Spencer Childers, who will continue as chairman. Mr Childers assumed the addi-tional jobs of president and chief executive officer in August when Mr Robert Bloomberg • The LOUISIANA LAND AND EXPLORATION COMPANY has appointed Mr. Richard A.

achmann as senior vice-presi dent, finance and administration, a new position within the company. Mr Bachmann, who will he hased in the company's headhas made Mr Larry M. Hotchkies quarters in New Orleans, will and Mr W. Robert Reidelberger serve as chief financial officer in charge of finance and administrative services. Mr Bachmann was vice-president and treasurer

All these Bonds have been sold. This announcement appears as a matter of record only.

NEW ISSUE

Vereins-und Westbank

November 10, 1981



VILLE DE MONTRÉAL

25,000,000 European Units of Account 13 1/4 per cent. Bonds due 1988

Kredietbank International Group

Algemene Bank Nederland N.V. Amro International Limited Bank Brussel Lambert N.V. Berliner Handels- und Frankfurter Bank Citicorp International Group Crédit Communal de Belgique/Gemeentekrediet van België Crédit Lyonnais

Kuwait Investment Company (S.A.K.) Merrill Lynch International & Co. S.G.Warburg & Co. Ltd.

		•	
Alahli Bank of Kuwait K.S.C.	Banca del Gottardo	Banco Ambrosiano	Bank of America International
Bank Gutzwiller, Kurz, Bunger	er (Overseas) Bank!	Mees & Hope NV	Banque Générale du Luxembourg S.A.
Banque Internationale à Luxen	bourg S.A. Banque de Pari	s et des Pays-Bas Belgique S.	A. Banque de Paris et des Pays-Bas pour le Grand-Duche de Laternhourg S.A.
Chemical Bank International C	roup Continental Bank	k S.A. Crédit Comme	ercial de France Crédit Général
Crédit Lodustriel d'Alsace et de	Lorraine Crédit	Industriel et Commercial	Credit Suisse First Boston
DG Bank Domini	on Securities Ames	European Banking Comp	any Gefina International
Kredietbank S.A. Luxembourg	eoise . Kred	lietbank (Suisse) S.A.	Lévesque, Beaubien Inc.
Molsón Roussezu Inc.	Morgan Stanley Inter	national l	Nederlandsche Middenstandsbank N.V.
Nederlandse Credietbank nv	Nippon European Bank S.A	Nomura International	Société Générale de Banque S.A.

Westdoutsche Landesbank Girozentrale

Zentralsparkasse und Kommerzialbank, Wien

FT INTERNATIONAL BOND SERVICE

and the U.S.

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U.S. DOLLAR		Change on	Change on
STRAIGHTS Anheuser-Bush 16½ 88		Bid Offer day week Yield 101월 102일 +0일 -0일 15.98	
APS Fin. Co. 174 86	60	1031, 1035, 0 -04 16.10	Federal Dev. 174 86 C\$ 40 1102 103 -04 -2 16,88
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Caterpillor Fin. 164, 86	100	1011, 1011, 0 -11, 15.97	M. Sk. Dnmk. 9 91 EUA 25 833, 85 -04, +14, 11.75
CFMP 164, 96 CIBC 164, 91	100 100	101% 102% +0% -0% 16.38 100% 101% +0% -0% 16.49	
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EIB 16½ 91	100	101 1011, 0 -11, 16.44	Rabobank 12 86 Fl 50 1017, 1021, +01, -07, 11.32
GMAC 0:S Fin 162 84 Gull States 0/S 172 88	360 60	100½ 101 +0½ -0½ 16.05 102½ 103½ 0 -0½ 16.62	Air France 141, 86 FFr. 200 931, 941, 0 +01, 16.63 Bk. America 141, 86 FFr 250 927, 937, -01, -01, 16.70
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Nawfoundland 17% 89	60	1061, 1061, 0 0 15.68	OKB 14 86 FF: 400 921 931 +01 +01 16.50
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Ouches Hydro, 174 91	150	1031, 104 -01, -11, 16.40	BNP 131 71 C 15 844 854 + 04 + 04 16,95
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Swed. E. Cred 161, 93 Tonneco ini, 17 89	75	1011, 102 +01 -01 16.13 1031 1031, -01, -01 16.09	Privatbanken 141, 88 £ 12 881, 891, 0 -21, 17,43
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Welt Disney 151 86	100	100 101 + 04 - 07 15.31	Akzo 94 87 Luxfr 500 844 854 +04 -24 13.05 Euratom 94 88 Luxfr 500 854 864 -04 +04 13.32
Winnipeg 17 86 WMC Fin. 151: 88	50 50	1021, 1025, 0 -11, 18.17 961, 965 +01, -01, 16.39	Eurofima 101, 87 Luxfr 600 911, 921, +01, +01, 12,50
World Bark 1688	80	991, 100 -01, -01, 16.00 1017, 1021, 0 -04, 15.75	EIB 94 88 LuxFr 660 874 884 +04 +04 12.82 Volyo 94 87 LuxFr 500 864 874 0 -04 12.71
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STRAIGHTS		Bid Offer day week Yield	Bank of Montreal 54 91 04 594 997, 29/4 17.06 17.13
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CECA 10 91 Coun of Europa 10 91	120 1 0 0	100% 101% + 0% - 1% 9.78 99% 100% 0 - 0% 9.54	Christiania Bk. 51, 91 101, 981, 991, 5/2, 15.56 15.74
Coun of Europe 104 91	100 100	1001, 101 0 -01, 10.13 991, 1001, -01, -1 10.09	Co-Ban Eurofin 51, 91. Qu. 381, 991, 14/4 15.89 16.88 Den Norske Cred. 51, 93 Qu. 971, 977, 4/6 13.56-13.89
EIB 81, 90	200	911, 921, 0 -11, 9.92	Genfinance 51 92 . 01, 995, 1001, 30/6 151, 15.52
EIB 101, 91 Finland, Rep of 101, 86	200 100	102 102½ 0 -0½ 10.08 100½ 101 0 -0½ 10.31	Gro und Benk 54, 91 104, 987, 991, 23/3 14,06 14.19 GZB 54, 92
nror-American 10 91	100 100	997 100% +0% -1% 9.95 100% 100% +0% -0% 10.16	Ind. Bank Japan 54 88 01, 981, 981, 975 13.31 13.50
intor-American 104 91 Japan Air Lines 84 87	100	951, 961, 0 -1 9.08	LTC6 Japan 51 89 04 99 994 16/1 18.32 18.46
Midland Int. Fin. 81; 90 Vit Bk Drink 101; 91	180 160	92 ² 3 93 ² 3 +0 ² 3 -0 ² 4 9.67 99 ² 3 100 ² 5 -0 ² 5 -0 ² 5 10.51	Midland Int. Fin. 9 91 Q1 993, 1001, 30/4 17.08 17.08 Nacional Fin. 51 88 Q1 973 981, 25/3 17.31 17.87
Not Wast. 11 91 .	125	104% 104% 0 -0% 10.21 100 100% +0% -0% 9.69	Nat Bk. Canada 54 88 04 991 100 24/3 17.31 17.36
New Zealand 9% 89 DKB 10% 91	200 150	10014 10014 +014 -01 10.03	Net West, Fin. 51, 91 501, 987, 991, 15/1 187, 78.28 Net West, Fin. 51, 92 501, 991, 1001, 23/4 17 17:02
Juahoc Hydro 10% 91. Renault Acet. 10% 86	150 150	1011, 1017, -014 - 11, 10.00 1001, 1001, +01, -01, 10.56	Naraic int Fin. 5-2 81 014 983 993 6/5 1234 15.78
Sered Ex Cred 104 91	100	981 99 ~01 -01 10.42	Pemex 6 91 01, 971, 98 8/4 17 17.39
Vorid Bank 11 91 . Vorid Bank 10 91	100 250	7031, 1037, 0 -07, 10 19 994, 1007, 0 -07, 9.97	PKbanken 5 91 04 884 994 17/6 145 1452. Sanwa ini Fia 54 88 04 1994 100 24/3 171 17.29
Average price chang		In day 0 on work 0's	5colland Int. 54 92 . 04 98 981, 23/3 13.94 14.19
FWISS FRANC STRAIGHTS	lesued	Change on Big Offer day week Yield	Soc. Pacific 51, 91 01, 381, 381, 24/5 131, 13.45. Societe Generale 51, 91 01, 39 991, 22/1 181, 18.77
Arroport Paris 61: 91	60 80	1941 ₂ 95 0 0 7.29 102 1021 ₄ 0 -01 ₄ 7.66	302 Bhankan 6 87 01. 981, 991, 21/6 14.44 14.58
lsion Dev. Bank 8 90 FCE 6 ² > 91	700	95 951, 0 -01, 7.25	Sumitoma Fin 53, 88 . Qt. agg. 100 8/9 40 55 40 55
Beigelectric Fin. 7½ 91 Bell Canada 74 93 .	100 100	1011, 1011, -01, -01, 7.50 1051, 1051, 0 -01, 6.96	Average price changes . On day 0 on week -Qt
Bergen, City of 6%, 91	40	100 4 1004 +03 -04 6.67	BONDS data and D. A. M.
Rei de Autopiatas 8 90 CECA 6% 91	50 80	1001, 1003, +01, 0 7.50	Allomoto 54 95 7/81 933 967, 98 +01, -0,34
Dome Petroleum 5½ 91	100	93 ¹ 7 93 ¹ 4 0 -0 ¹ 7 6.71 103 ¹ 4 104 0 -1 ¹ 4 6.63	Canen At oc 31.86
Dome Potroleum 74 90 Franc, Petroles 64 91	100 80	196 961, -04 +04 7.06	Fuiter Fears 47 56 . 12/81 513.3 178 80 +1 -3.79
Genstar 7 91	100	102 10214 -014 -012 6.68	I FUITHERWA FIRE 3's St. 7/04 She sees were the
nt Amer Dv. Bk. 7 91 /S Elsam 83, 91	100 60	9812 9814 -014 -112 7,20 10412 10414 +012 +014 7.80	Hanson U/S Fin 92 96 8/81 2.74 183 849 +01 -2.42
lapan Air Lines 74 91	100	119414 19412 +013 -014 6.63	Hitachi Cred Cpn. 5 96 7/81 1773 921, 942, +01, 7.78 inchesps 8 95
Neder, Gasunie 8 91 DKB 7 93	100 1 100	\$106 1064 - 05 0 7.10 997 1004 + 04 - 05 6.99	NOW 35 N 32 35 9/81 229 84 85 +04 5.25
DKB 71₄ 91	100	100% 101 -0% 0 7.12	Maraushita El 74 95 11/00 500 1027 1049 -014 -0.62
Delo. City of 8 91 Soint Etlenne 81: 91	100 20	1051, 1051, -01, -01, 7.18 1041, 105 +01, 0 7.77	Minolta Camera 5 96 10/81 909 711 721 -01 10.12
Swed Ex. Credit 74 91	75	1971: 38 +012 +01: 7.59	1 100 100 100 100 100 100 100 100 100 1
FNT 0/S Fin. 8 97 Unilever NY 7½ 93	50 100	1051, 1051, 0 +01, 7.21 108 1061, -01, -01, 6.73	Nippon Chemi-C. 5 91 .10/81 919 75 767 -01 1.87
World Bank 6 91	100	1931: 94 +01, -04, 6.95	
Vorld Bank 7 90 World Bank 8 91	100 100	107 1071, -01, -01, 6.81 1061, 1051, 0 -01, 7.22	Sanyo Electric 5 96 10/81 652 777, 79 +01, 1,23 Similtonic Mot. 51, 95 10/81 305 841, 882, +01, 3,21
		n day 0 on week -04,	Tuelor Woodron 85 00 197 1721, 741 -1 10.20
YEN STRAIGHTS	legned	Change on Bid Offer day week Yield	
45ian Dav Bk. 81₄ 91	75	100 101 0 + 01 8.06	1 11-1-1 nt c 2/81 31.25 164 . 655 + 05- 39.86
Australia 61, 88 EJB 71, 89	2 0 12	31½ 92½ 0 +0¼ 8.27	MILEUDIANI II 0 45 DM 2/32 263 1001, 1011, +05, -0.12
Company Co	45	984 994 +04 +04 7.87	Sherp Con. 52 88 DM 9/80 691.8 1667, 168 41% -Z.E1

Change on day week Yield EUROBOND TURNOVER Last week.... Previous week 2.339.3 Other bonds Last week..... Previous week 1.279.6 * No information available-previous day's price. † Only one market maker

supplied a price. STRAIGHT BONDS: The yield is the yield to redemption of the mid-price; the amount issued is in millions of currency units except for Yen bonds where it is in billions. Change on week—Change over price a week

FLOATING RATE NOTES: Denominated in dollars unless otherwise indicated. Coupon shown is minimum. C:die=Date next coupon becomes effective.

Spread=Margin above six-month offered rate († three month; § above mean rate) for U.S. dollars. C.cpn = The current coupon. C.yld = The current

CONVERTIBLE BONDS: Denominated in dollars unless otherwise indicated. Chg. day = Change on day. Cav. date=First date for conversion into shares. Cnv. price = Nominal amount of bond per share expressed in currency of share at conversion rate fixed at issue. Prem=Per-centage premium of the current effective price of acquiring shares via the bond over the most recent price of the shares. The list shows the 200 latest international bonds for which an adequate secondary market

exists. The prices over the past week were supplied by: Kredietbank NV; Credit Commercial de France; Credit Lyonnais; Commercbank AG; Deutsche Bank AG; Westdeutsche Landesbank AG: Westdeutsche Landesbank Girozentrale; Banque Generale-du Luxembourg SA; Basque Internationale Luxembourg; Kredielbank Nederland NV; Pierson, Heldring and Pierson; Credit Suisse/Swis Credit Bank Union Bank of Switzerland. Akrayd and Smithers; Bankers Trust International: Gredit Com-Trust International; Credit Com-mercial de France (Securities) London: Citicorp International Bank: Datwa Europe NV: Datter Securities (UK): EBC: First Chicago: Goldman Sachs Inter-national Corporation; Hambrus Bank: BJ International: Kidder Peabody International; Manual turers Hanover, Merrill Lysch, Morgan Stanley International, Nikko Securities Company (Europe): Orion Royal Bank; Salomon Brothers International: Samuel Montagu and Co. Scan-dinavian Bank, Societe Generale Strates Turnbull; Subikoma Finance International; S. G. Warburg and Go.; Wood, Gundy

Closing prices on January, In

The Financial Times Ltd., 1982.

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Financial Times Monday January 18 1982			مكالم التعل	17
Companies and Markets	WORLD STOC		LICULAND	HONG KONG
	1491.5	Stock	1981/62	1981 82
1314 28 Colifinds Alternam 2442 3572 Grainger (NW) 3654	AUSTRALIA All Ord. (1/1/80) Metal & Minis. (1/1/80) Metal & Minis. (1/1/80) Metal & Minis. (1/1/80) BELGIUM Belgian SE (31/12/85) DENMARK Copenhagen SE (1/1/78) 122.72 122.81 122.56 127.93 122.56 127.13 122.73 122.61 123.56 127.13 123.53 124.61 125.56 127.13 125.54 125.55 127.16 125.55 127.16 125.56 127.17 125.56 127.17 125.56 127.18 125.56 127.19 125.66 127.19 125.79 12	AUSTRIA 1012 Zanith Radio 1115 258 258 257 Unde 511 1155 MAN 191 166 1824 Mannesmann 142,6 228,6 230,0 Mercedea Hig 244 228,6 230,0 Mercedea Hig 244 228,6 230,0 Mercedea Hig 244 228,6 230,0 Mercedea Hig 248 238,6	1.15	3.7 2.80 Protea Hidgs

MONEY MARKETS

COLIN MILLHAM

Credit shortage hits London

week, and interest rates showed a firmer trend, largely in response to rising rates in New York. Action by the Federal Reserve to drain liquidity from the Federal funds market had an impact on rates, as did fears that last week's money supply

would record a large rise.

Against this background

London three-month interbank
money increased to 15% per cent
interpretations are likely to be difficult again this likely to be difficult again this week as the tax paying season

money increased to 15% per cent from 15% per cent, but continued assistance by the Bank of England kept the key seven day rate down to around 14% per cent.

Despite several helpful factors, such as payment of £177m rate support grant, gilt dividends of around £170m, and about £400m from a maturing Treasury stock, money was in very short supply

BANK OF ENGLA	ND TF	REASURY BI	LL TEN	IDER_
i Jan. 16	I Јал. 6	!	Jan. 15	Jan. 8
Bills on offer £100m Total of	!	Top accepted rate of discount	14,5599%	14,8206%
applications£370.7%m Total allocated £100m Kinimum	£100m	rate of discount	14.5459% 15.09%	14,5701% 15,23%
accepted bid £96.37 Allotment at minimum level 78%	£96,305	Amount on offer at next tender	£100m	£100m

CONDITIONS WERE fairly tight on Friday as large tax payments in the London money market last came through, including tobacco DM 400m on Monday borrowings tions pushed up call money to tax of £275m.

This, coupled with run-down bank balances, the usual Friday rise in the note circulation, bills maturing in official hands and a take-up of Treasury bills by the market, produced a net shortage of around £450m.

Total help given by the authon by the authon by the banks under the special loss pushed up call money to 10.5 per cent by mid-week from less than 10 per cent at the end of the previous week, but by Friday call money had eased to Bundesbank worth DM 3.4bn.

WEEKLY CHANCE IN 1997

WEEKLY	CHANGE IN	WORLD	INTEREST	RATES

e 5		Jan. 15	change		Jan, 15	change
n	7 day Interbank	141 ₂ 145 ₈ -15	!+1k		1534 123a-125s	Unch'd
n n	3 mth Interbank Treasury Bill Tender Band 1 Bills	14.5459 143 ₈	I-0, 1242	5 mth Treasury Bills 6 Mth. Treasury Bills 3 Mth. CD	11.95 12,75 13.40	+0.49 +0,55 +0.35
n e	Band 2 Bills Band 3 Bills 3 Mth. Treasury Bills		Unch'd Unch'd	FRANKFURT Special Lombard	10.5 10.65	Unch'd Unch'd
0 5- 0	3 Mth. Bank Blis	14 ½ 141 ₂ 14 ½ -14 ;	Ĺ	Three month	10,50	_0.075
v		6.59375 6.53125	-0,0626 Unch'd	Intervention Rate 1 Mth. Interbank	143 <u>.</u> 1514 1514	Unch'd + 4 + 14
-		147 ₂	_lg	MILAN One month	20 % 21&	Unch'd +1
-		105g 1054	┆ ┊ ──┆ ╈	DUBLIN One month	18 184	+ 8g + 5a

Landon—band 1 bills meture in up to 14 days, band 2 bills 15 to 33 days, and band 3 bills 34 to 63 days. Rates quoted represent Bank of England buying o selling rates with the money market during the week. In other centres rates are generally deposit rates in the domestic money market, and their respective changes during the week.

Į	ĺ	-	e e			•			·		<u> </u>
			EQUITIES			issue 5 price £	Renunc.	1981/3	Stock	- Indiana	00 d
	price price	1981/8 1981/8 High Low	Stock 50	the part of the pa	Gross Stoke yield P.E. ratio	71 ₂ F 142 F 2.5AS N	P. 31/12 29/ P. 29/12 29/	1 81 ₂ 71 ₂ 1 164 155	Airwood Mach. 71: Brown (M) C S R A\$1	p	8 164 + 6 65pm + 1 2pm
		98 95 95 95 95 95 95 95 95 95 95 95 95 95	Asset Speial 10p	50,5 1, 60,5 1, 64,9 2, 64,9 2, 64,1 2, 10,2+12 2,18 1,	2 2 4 4 8 8 6 8 3 6 . 1 5 4 1 2 6	95 N 180 N 44 F 50 F	P 25/12 21/ ii	9pm 7pm 36pm 32pm 53 48 1 54 50 29 36	Starton Real Est Great Portland Est I.C.L. Kwik Save 10p Lennons Grp. 10p. Strong & Fisher Telfos 20p. T N T 500 Wearweil 5p.	-	180 7pm 32pm 52 51 51 26 109pm 2pm
	150 F.F.	P. — 305 52 P. — 305 270 P. — 1712 14 P. — 9 412 P. 18/18 70 68 117 5 P. — 120 117 P. — 5	#Hayters £1 15; #Malaysian Tin 5p 15; #Wewmarket (1981)5c 26; #Owners Abroad 10p 12; #Sheldon Jones 6; #Speyhawk 10p 111; Viners 1p 3; #York Mount 47	2 b0,5 3.	.8 9.6 7.3 — 11.4 — 2.1 9.5 4 7.2 7.8 .6 8.5 5.3 .9 18.7 2.0	based on capital: of Assumed. F Divident Q Gross. now rank price. P	prospectus ver based or dividend s u Forecast and yield T Figures s ng for divid Pance unless	estimata. « U idividend on h idividend on h idividend: co- based on prost saumed. † Co end or ranking otherwise Indi	for dealing free of hidden arts paid all capital. g Assul crip issue. m interpretation of the process or other off wer allows for county for restricts cetted. I sessed buts." ** Issued buts."	med dividence in since it who we will be attempt no entire to the inversion of it dividence. The way of all the way of all the inversion of th	d and yiek norsesed of a seminground for 198 distres no 5 Placin 1 Official in this ligation
		FIXED	NTEREST ST	ocks		§§ Reintro	luced. 11 is introduction. fully-paid).	lasued to conne	former preference or partly-paid alk	holders. I siment letter ned Securiti	三 Allotmer 大 Wi
	price E	DE TENED 1981/8	Stock		Closing prices prices + or	## Londor comprisin	Listing. 33 Ordinan	end 25 Loan	e price and comp 1986-88.		/ 1. (1. (a)
	97.48 £25 100 F.P F.P F.P \$100 F.P \$100 F.P \$100 F.P \$70 F.P	25/8:104 102 - 89 86 - 107 102 - 10012 99 - 1000 9914 - 9934 994 - 78 64		rf. 1986	89 9854 9954 99550	C	Auth elephone 1 parent	ority tumber in	Annual Interegross payinterest able		Life

FT UNIT TRUST INFORMATION SERVICE

OFFSHORE & **OVERSEAS**

FT LONDON INTERBANK FIXING

5 months U.S. dollars bid 14 5/18 offer 14 7/18 6 months U.S. dollars			
bid 14 5/18	offer 14 7/10		
6 months	U.S. dollars		
bid 15 1/16	offer 15 5/16		

LONDON MONEY RATES

Jan. 15 1982	Certificate of deposit	Interbank	Authority deposits	negotiable bonds	House Deposits	Company Deposits	Market Deposits	Treasury Bills ē	Bank Bills o	Trade Bills 4
Overnight	15/2 15/2 15/3 15/4 15/4 15/4 15/4 15/4 15/3 15/4 15/3 15/4	3-15½	1412-1454 1456-1454 1454-1478 15 1546 1556 1556	16%-16 164-157g 181g-154 147g-145g 154-15% 151g-1514	151g 151g 151g 151g 151g 151g 151g	=	121 ₂ -141 ₄ 	141-141 ₂ 141-141 ₂ 141-141 ₂	14:3-141 ₂ 14: ₂ 14: ₂ 14: ₂ -14: ₄ 14: ₂ -14: ₂	15 <i>t</i> g 15 <i>t</i> g

EURO-CURRENCY INTEREST RATES (Market closing Rates)

Jan. 15	Sterling	U.S. Dollar	Canadian Dollar	Dutch Gulider	Swiss Franc	West German Mark	French Franc	Italien Lira	Belgian Franc Convertible	Јарапесе Уен
Skort term 7 days' notice. Month Three months Six months One Year	15 2.15 1	124g 125g 1254-13 135g-135g 14-14 k 147g-151g 15-1514	13-14 13-14 14-14-76 15-19-15-19 16-19-16-19 18-19-16-19	104-10-6 10-6-10-2 10-6-10-8 10-6-10-6 10-6-10-6 10-6-11-6	812-3 512-4 814-858 813-813 813-813	978-10 10-1018 10-1-10-18 10-18-10-18 10-18-10-18 10-18-10-18	15-151 ₂ 15-151 ₂ 151 ₈ -155 ₂ 161 ₈ 185 ₈ 171 ₈ -175 ₈ 181 ₈ -185 ₈	17-20 1854-21 2058-2158 2154-2258 2318-2454 254-2418	12 12-15 13-16 18-20 1934-2034 20-2112 1834-2012	6-51g 61g-614 614-63g 617-65g 617-65g 616-61g

CURRENCIES AND GOLD

Dollar strong

The dollar continued to advance in the foreign exchange from the effects of the UK labour market last week. Eurodollár interest rates were firmer, with three-month rising to 141 per the present wage claim by the cent from 131 per cent. Fears miners. that M1 money supply could rise by as much as \$10bn last week were behind the upward pressure on interest rates and the strength of the dollar, although by the end of the week most analysts expected a much lower money growth figure.

There was also considerable 91.8. interest in the December U.S. industrial production, and its implications for the recession in the economy. It was also suggested that the lack of money market intervention by the Federal Reserve on Thursday after several days of draining authorities were prepared to let interest rates ease, but the Fed was back in the market again on Friday.

rose on the week to 109.0 from 107.3. It improved to DM 2.3125 from DM 2.2585 against the D-mark; to FFr 5.87 from FFr 5.73 against the French franc; to SwFr 1.8575 from SwFr 1.8265 in terms of the Swiss franc: since November 1979, and and to Y224.50 from Y221.35 finished at \$376.377, a fall of \$24 against the yen.

GOLD

Pound Sterling U.S. Polise

French Franc 10 Swiss Franc

Dutch Guilder Italian Ura. 1,600

Canadian Dollar Belgian Franc 100

0,231 2,384

0.912 0.288

9.432 4,454

1,704 9,538

10,30

5.942 1.245

6.914 1.878

382.6 120.8

88,69 182,2

2,318 4,763

4,901 14,91

Sterling continued to suffer situation, including the strike by train drivers and the vote on

The pound fell to its lowest level since late October on Thursday, but picked up towards the end of that day, and continued to recover on Friday. It finished at \$1.8685 a fall of 5.05 cents on the week, and the Bank of England index fell to 90.6 from

Rumours of a devaluation continued to plague the Belgian frauc. although these were strongly denied by the Govern-ment in Brussels. It remained the weakest member of the Euro pean Monetary System, but well within the alarm bell divergence limit. The D-mark and lira changed places several times as the second and third weakest EMS currencies, while the On Bank of England figures the dollar's trade-weighted index to the week to 1090 from Dutch guilder. This tended to push down Amsterdam interest rates, but put upward pressure on Paris rates at the end of the week,

Cold Buillon (fine ounce)

THE POUND SPOT AND FORWARD

Jan 15	Day's spread	Close	One month	% p.a.	Three months	% p.a.			
U.S.	1.8640-1.8805	1.8680-1.8690	0.28-0.18c pm	1.48	0,48-0,38 pm	0.92			
Canada	2,2220-2,2430	2.2370-2.2380	0.15-0.05c pm	0.54	0.20-0.05 pm	0.22			
Nechind.	4.69-4.74	4.725-4.735	17s-14c pm	4.12	51-41 pm	4.12			
Belgium	72.90-73.65	73.50-73.60	18-38c dis	-4.57	85-115 dis	-5.44			
Denmark	14.02-14.12	14.081-14.0912	37-21-ore pm	2.55	514-31; pm	1.24			
Ireland	1.2045-1.2210	1,2190-1,2200	0.16-0.26p dis		0.74-0.92dis	-2.72			
W. Gar.	4.29-4.34	4.311-4.321	2-11 ₂ p1 pm	4.86	53-47 pm	4.74			
Portugal	124.00-125.50	124.40-124.70	25-185c dis	-10.12	105-385 dis	-7.87			
Spein	184.75-186.25	185.10-185.30	10-40c dis		45-75 dis	-1.29			
Italy	2299-2317	2301-2303	104-134lire dis.		39-43 dis	-7.12			
Norway	10.93-11.03	10.961-10.9712	27-11-ore pm	2,39	51-4 pm	1.78			
France	10.89-10.98	10.96-10.97	4c pm-1 dis	-0.27	2-3 dis	-0 91			
Sweden	10.50-10.55	10.50-10.52	23-17-ore pm	2.64	63-5% pm	2 40			
Japan	416-422	419-420	3.20-2.90y pm		8.95-8.65 pm	B.39			
Austria	30.00-30.30	30.07-30.12	16-11gra pm		4212-3212 pm	4.98			
Switz.	3.45 2-3.491,	3.454-3.474	21-11c pm		51-5 pm	6.05			
	Belgran rate is for conversible francs. Financial Iranc 81 90-82 00 Six-month lorward dollar 0.48-0.38c pm. 12-month 0.55-0 40c pm.								

THE DOLLAR SPOT AND FORWARD

Jan 15	spread	Close	One month	p.a.	months	рæ
UKt	1,8640-1,8805	1.8680-1.8690	0.28-0.18c pm	1.48	0.48-0.38 pm	0.92
Irelandt	1,5360-1.5445	1.5350-1.5360	0,60-0.50c pm	4.28	1.60-1.40 pm	3.89
Canada	1.1917-1.1930	1.1920-1.1925	0.09-0.13c dls	-1.11	0.29-0.34dis	-1.05
Nethind.	2,5160-1,5325	2.5275-2.5325	0,70-0.69c pm	3.09	2.2C-2.10 pm	3.41
Belgium	39,10-39,37	39.35-39.37	14-19c dis	-5.06	54-59 dis	-5.78
Denmark	7,5000-7,5525	7.5475-7.5525	0,15are pm-0.10a	dis 0.03	par-0.50 dis	-0.13
W. Ger.	2.2940-2.3130	2.3120-2.3130	Q.ES-Q ECpf pm	3.24	2.25-2.20 pm	3.85
Portuga!	66.38-66,85	66,60-65,20	75-™c dis	10.37	75-220 dis	- 8 PG
Spain	98.80-99.30	98.90-98.95	20-70c dis	-3.03	50-65 dis	-2.32
Italy	1231-12331.	12311,-12271	7-81-re dis	-7.31	23-241; dis	-771
Norway	5.8600-5.8740	5.8693-5 8743	L 10-L 100ts bill	1 02	1 25-0.35 pm	0 71
Franca	5.8350-5.8725	5.8675-5.8725	0 70-0 90c dis	-1.75	2.55-2.85dis	-185
Sweden	5,6220-5,6430	5.6223-5.6270	C.55-0.35ore pm	0.96	2.45-2.25 pm	1.67
Japan	223.00-224.75	224.75-224.55	1 50-1.35y pm	7.62	4.33-4.15 pm	7 53
Austria	16.08-16.12-	16.C8-16.09	61-41-gro pm	4.10	181151; pm	4 23
Swrtz.	1.8400-1.8630	1.8570-1.8580	0.92-0 82c pm		2 62-2.52 pm	5.53
† UK	and ireland a	re quoted in U	S. curroncy F	ngword	ស្ត្រាយនៅខ្លួនក្នុងក្	

discounts apply to the U.S. dollar and not to the individual currency

FORWARD	RATES	AGAIN	IST ST	TERLIN	IG
Dollar D.Mark French Franc Swras Franc Japanese Yen	4.3225 10.9650 3.4725	1 month 1.8662 4.3050 10.9675 3.4538 418.5	3 month 1.8642 4.2713 10.990 3 4200 410.7	6 month 1.8642 4.2173 11 0537 3.3626 402.5	12 month 1.86375 4.1224 11 1318 3.2474 388.7

EMS EUROPEAN CURRENCY UNIT RATES

4,730 2,531

8.734 1.508

	ECU central rates	Currency amounts against ECU January 15	change from cantral rate	% change adjusted for divergence	Divergence limit %
Beigran Franc	40.7572	41.6443	+2.18	+1.27	1.53 68
Danish Krone	7.91117	7.97685	+0.83	-0.08	+1.6412
German D-Mark	2.40989	2.44378	+1.41	+0 50	-1 1077
Franch Franc	6.17443	6.20623	+0.52	- 0 39	-1.3733
Dutch Guilder	2.66382	2.67455	+0.40	-0.51	<u>-1 5063</u>
nsh Punt	0.684452	0.688756	+0.63	-0.28	-1.6628
talian Lire	1300.67	1309.62	+0.69	+0.57	=4.1229
		CU, therefore djustment cale			
5	Sterims ECI	J rate for Jan	uary 15 👡	0 555412	

Close		2014	DENIGHT ITING OF	uae:							
Ringstrand \$393.90 \$100.1061 \$300.301 \$230.301 \$210.1061 \$100.10	Opening	\$37634-37734 \$377.25	(£20134-90214) (£201.868)	.\$37412-3751 <u>2</u> !\$371	(£20114-20154) (£198,248)		central	amounts against ECU	from central	adjusted for	
Krugerrand \$392.393 \$230.391 \$230.39		Gold	Goin#			Balana France	40.7650		+2.50		
16 Krugerrand 16 Kruge	Visigerrand.	: 8392-393									
14 15 15 15 15 15 15 15	1/2 Krugerrand	2202-203							+1.41	+0 50	
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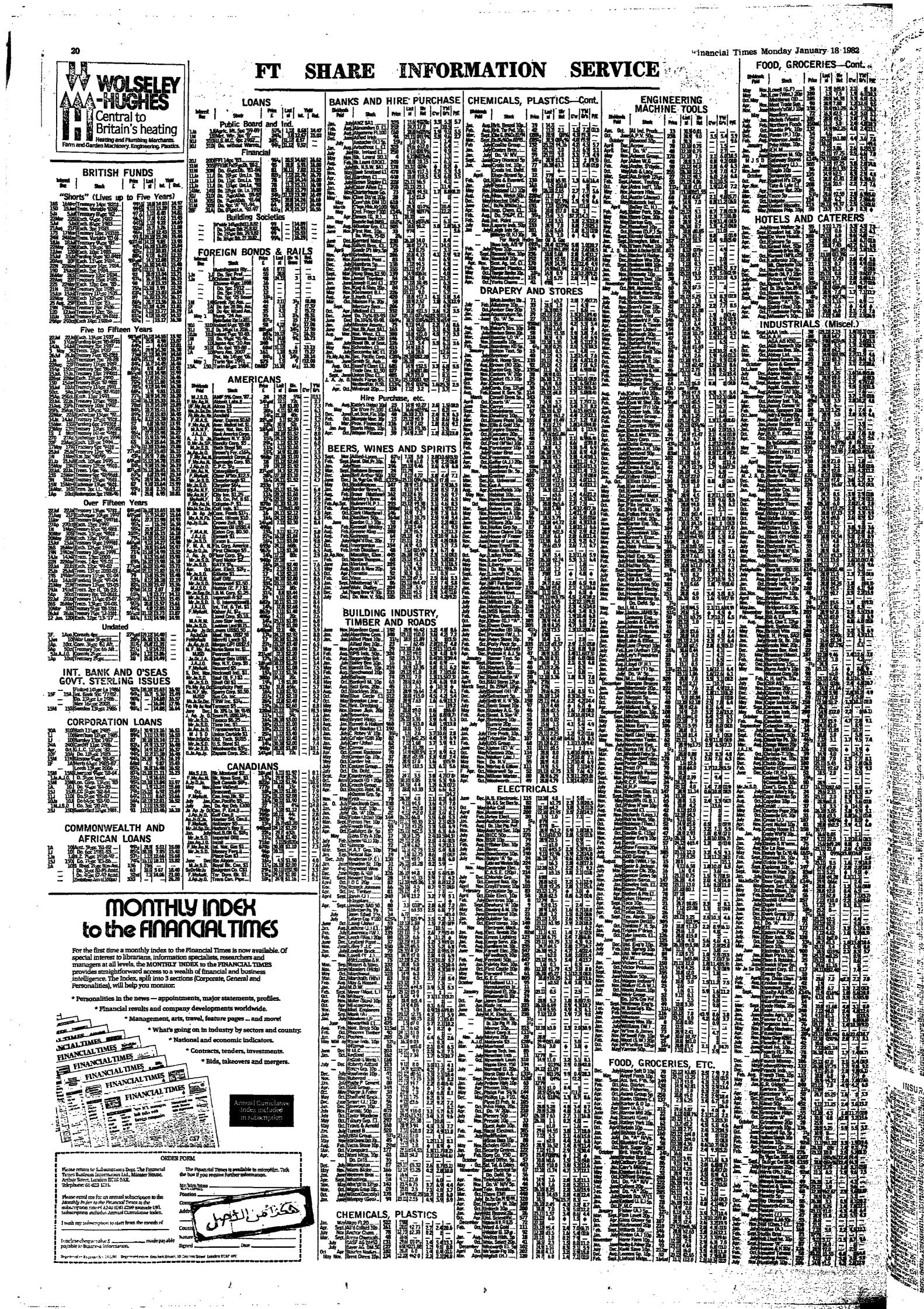
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Monday January 18 1982



'DRASTIC' ACTION PROMISED TO OPEN MARKETS TO IMPORTS

Vow on Japanese trade bar

JAPAN will take "drastic" to foreign imports by removing in dismantling Japan's non-non-tariff barriers to trade, Mr tariff trade barriers. Shimtaro Abe, the Minister of International Trade and Industry, said at the weekend.

in which representatives of the reductions in tariffs. They world's main trading nations re-understood him to be going affirmed their faith in free trade considerably further to open up and promised to adhere to "the letter and the spirit" of the already announced by the new General Agreement on Tariffs Government that took office in and Trade (Gatt) to combat November. mounting protectionist pres-

Mr 'Abe made no specific grouped representatives of the U.S., the EEC, Japan and Canada. He said however that on his return to Tokyo this week, he would ask for the current review of Japan's nontariff parriers to be stepped up and concluded this month.

Rising U.S.

rates worry

ministers

By David White in Paris

EUROPEAN concern at the re-

cent resurgence of U.S. interest rates was voiced yesterday dur-

ing a meeting of Finance

Ministers from the top Western

countries.

The "Group of Five" ministers held their talks in an iso-

the Palace of Versailles. They

are understood to have dis-cussed mainly the international

No announcement was made

after the meeting, which brought together Mr Donald Regan, U.S. Treasury Secretary.

Sir Geoffrey Howe the UK Chancellor of the Exchequer,

and the Finance Ministers of

France, West Germany and

The issue of Poland's debt to

the West is thought to have

featured as well in the talks,

following a meeting in Paris

last week between senior offi-

cials of the main creditor

the five countries were also in-

vited to partake in a luncheon

at Versailles given by M.

Jacques Dolors, the French

Finance Minister, prior to the

of regular informal gatherings of

the "Group of Five." The meet-

ing was specifically geared to

the forthcoming interim com-

muttee of the International

Monteary Fund, to be held in

The talks were one of a series

monetary situations.

interest

action soon to open its markets pected "drastic improvements"

Abe had mentioned health and The Japanese pledge came safety standards and product-stret two days of informal talks. areas for action as well as faster

European officials at the talks nevertheless said they feared that Japanese action, as in the commitments to the relaxed past, would be "too little and meeting of senior officials, which too late." The U.S. and the EEC have warned Tokyo in recent months that it must open its markets or face the danger of retaliatory action from its trading partners.

> The Europeans also expressed alarm at the idea of trade reciprocity" currently under steps" that would reduce trade was made, officials said.

which foreign countries would a way that would undermind the be allowed access to the U.S. multilateral world trade system market only to the extent that he said. their own markets were open to He s American goods.

and fracture the open world they had agreed to consult each trading system that had been other in future before taking developed since the Second any precipitious trade action.

fears. At an open-air press conference on a private gold course a tiger" that would be difficult to get off.
He said Washington was look-

ing for "affirmative" reciprocity to resolve current trade disin the sense of asking others to open their markets. It was not the Reagan Administration's steel exports. The steel issue intention to take "negative

As a result, he said, he ex- study in Washington, under volumes or to act selectively, in

He said the meeting had agreed to try to manage trade European officials said that problems in accordance with such thinking could mean a the GATT objectives, of "freer return to the beggar-my-neighour policies of the 1930s. The participants also said

Officials said it had also been After the talks Mr William agreed that greater emphasis Brockfi the U.S. trade repressional between the placed on industrial sentative, tried to dispel these co-operation through opening up capital markets, particularly the Japanese market, to mutual Mr Brock said the U.S. did not investment, and that work want "to climb on the back of should go ahead on U.S. proposals for liberalising trade and

> The meeting made no attempt putes, such as that between the U.S. and the EEC over European

Budget tax relief plan to boost inner cities

introduce tax relief in the Budget for companies diffesting in Britain's depressed and declining inner cities.

Treasury ministers and the Inland Revenue have agreed on the least controversial part of the proposal, contained in a confidential Treasury document circulating among senior ministers. This will allow tax relief-principally corporation tax and petroleum revenue tax on contributions to Enter-

prise Agencies.

A far more radical and expensive concession is a proposal to allow tax relief for bricks-andmortar investments in the city areas, recognised by the Government as the most depressed by their designation as programme and partnership authorities.

At least one Treasury minister is "worried" by this idea and the Inland Revenue is said in Whitehall to be "wholly hysterical" because it fears it could rapidly escalate into relief costing tens of millions

The Government is also castand imaginative positive initiatives "to put heart" into the Budget and very few have been forthcoming. The intro-duction of a system of Urban Development Action Grants on

THE GOVERNMENT is to may therefore, also be included Reckitts and Norwich Union)

specific Government grant, loan or subsidy to a local project in inner urban areas, if a substantial portion of the cost has already been committed by the private sector.

The intention was to bring the idea forward "some time in 1982" but the attraction of using it to put some glitter into the Budget is gaining ground. Tax relief on Enterprise

Agency contributions is really an extension of relief for contributions to Chambers of Commerce. The loss to the Revenue is not likely to be more than about £500,000 a year. Companies which will gain include all the sponsors of the

London Enterprise Agency (Barclays, British Petroleum, British Oxygen, General Electric, International Business urgent problem. Machines, Industrial and Com- A similar sch mercial Finance Corporation, Marks and Spencer, Midland ing about anxiously for some Bank, Shell, United Biscuits and before Budget day, because the Whitbread).

include Birmingham, St Helen's The scheme, or part of it, is (principally Pilkingtons), Leeds thought to have been guarantmany locally based firms), teed inclusion this year because Bristol the lines of the U.S. system Norwich (Bally Shoes, banks, summer.

TUC cautious on militant action

west Cornwall and some British
Steel sectors (Cardiff, Clevecellor, and Mrs Margaret land, Cumbria and Shotton).

Thatcher have both accepted the idea, which provides a specific Government ment are a specific Government ment are a specific was a specific was

make big investment in deprived, commercially unattractive areas. This is where the wider-scale tax relief plan comes BP, for example, is particular

larly anxious to put large sums into inner cities rather than petroleum revenue tax. The arguments against the

plan centre on fiscal purity and the undesirability of reliefs (except mortgage relief) and danger of abuse. But the Cabinet is moving to the view, strongly put by Mr Michael Heseltine, Environment Secretary, that although one or two schemes have already started without tax relief, big incentives are needed to attract private sector resources to solve an

A similar scheme was pencilled into last year's Budget but was deleted the Friday expenditure revenue and columns were out of balance. (Imperial Tobacco), of the inner city riots last

investment in services.

Crucial talks

BY JOHN GRIFFITHS

THE UK Government-backed De Lorean sports car company is likely to be told today whether \$60m (£32m)-\$70m in export finance guarantees will be provided by the Export Credits Guarantee Department to overcome the company's increasing cash flow difficulties. Obtaining the guarantees has assumed major importance to

finance credit with Bank of America. Sales have slumped sharply and two weeks ago the company abandoned for the foreseeable future its threetimes postpoped attempt to raise private finance in the U.S. Today's meeting in London between senior De Lorean executives and the department follows the lodging in New York State Supreme Court at the weekend of a \$19m suit against De Lorean's chairman. Mr John De Lorean, by a former vice-president, Mr William Had-

Production of the stainless steel-bodied cars has been cut from 400 a week to 200 at the Dummurry plant, near Belfast, which employs 2,600 people. The meeting is expected to bring to a climax several months of negotiations. The department has expressed itself unwilling to provide such a guarantee without itself being underwritten by either of the two Northern Ireland development agencies through which the £80m government aid pro-vided so far has been channelled — the Northern Ireland Development Agency and the Department of

Bank finance

De Lorean says that such a uarantee, which would give eccess to bank finance at sub sidised interest rates, would allow production to resume at closer to its scheduled output of 400 a week in preparation for what it predicts will be a sharp seasonal sales upturn in March. Without the guarantee output can only be sustained at the current level. This could jeopardise at least some of the jobs created in Belfast

lows the sacking of Mr Haddad in connection with allegations of financial irregularities by the company contained in a file handed to Mr Nicholas Winterfon, Conservative MP for Macclesfield, by another former De Lorean employee. Mr Haddad was drawn into the affair because of an alleged memo from him to De Lorean concerning company expendi-

The Director of Public Prosecutions cleared the company of eriminal misconduct, in the wake of which Mr De Lorean filed seven suits for libel, including suits against Mr Haddad and Mr Winterton. Mr Haddad's suit afferes

slander, libel, fraud and malicious termination employment for resease contrary to public nolicy" Wintertone is also filing a counter-suit and save he will continue "at the appropriate time." to press in the Commons the issue of how the De Lorean company has conducted its

affairs.

Mr Haddad's suit includes allegations relating to the accuracy of the prospectus for public offering planned for last year: the alleged manner in which the company has sought t omodify its agreement with the UK Government: the effect on De Lorean executives' and dealers' share holdings and share options of the share offer being made through a new holding company rather than through De Lorean Motor Company; payments to GPD -Services, a Panamanian-registered partnership based in Geneva for car development; and the extent of personal prerequisite enjoyed by Mr De Lorean.

Continued from Page 1

French Credit Agricole, which have

special statutes and therefore escape state takeover. Three smaller institutions, registered as ordinary banks, are, however, likely now to be added to the Shares in the companies con-

cerned were expected to be suspended on the stockmarket

The main opponents of nationalisation—including the former Economy Minister, M René Monory-expressed satisfaction at the Constitutional Council's decision.

The decision is bound to spark off debate about the powers of the Constitutional Council, set up under the 1958 Constitution. The youngest member of the council is 68 and all the members were appointed before the election.

THE LEX COLUMN

The price of the top hat club

Five months after the introduction of new money market arrangements by the Bank of England, Smith St Aubyn, a medium-sized discount house, admitted to having lost £15m three quarters of its net worth — in the gilt-edged mar-

ket.
The two events may be in no way linked. But Smith's losses focus attention very forcibly on De Lorean, which has reached the \$30m ceiling of its export are to be remunerated for the services they provide. If dis-count houses are important, they should not need to supplement their income through punting in highly volatile mar-

Ironically, the basic bill business of the houses has been comfortably rewarded since August, and it seems that despite the Smith debacle, the total resources of the market actually grew in the last quarter of 1981. Smith apparently compounded its losses on Treasury 15 per cent 1985 by switching some of this: holding into the newly issued partly paid short tap which promptly became a very weak

All this took place right under the nose of the Bank of England, which can only have concluded that it was not its job to protect the houses from the consequences of their own mistakes—provided, that is, that only shareholders' money, not depositors' was at stake, and that the system as a whole was not threatened. But perhaps the system is under some sort of general threat. The houses exist in their pre-

sent form because the Bank likes to preserve a highly geared buffer, extremely sensitive to slight changes in the wind of official feeling about interest rates, between itself and the banking system. Sensitivity is not everything: the houses must make a living. Under the eld system of reserve assets it was easy; banks were required to leave large amounts of money with the houses, often when the houses' books were full - at low rates of interest. The discount market lived, like the clearing banks' own retail

operations, on an endowment, which for some reason the from 6 per cent, a smaller clearers resented very much. smount of capital will be able

houses have to be able to accom-modate large amounts of eligible bills at times when the Bank itself is not a substantial holder. To enable the houses their book — the so-called dential safeguard, to 30 times "club money" — with the discount houses. These deposits are a source of relatively cheap money which may be invested in higher yielding bills.

money. The houses would have to bid for funds in the interbank market. But they would then be unwilling to hold bills, since the Bank's need to encourage a plentiful supply ofbill issues to lubricate its own operations requires that the yield on bills should generally be below the cost of interbank funds. So some degree of subsidy of the houses' deposit base would seem to be required if they are to act as a channel for Ideally, the houses depend-

Suppose there were no club

ence on sources of earnings of such low quality as bond market speculation and running margins on cheap deposits should be reduced. Even if the club subscription were brought down from the present 6 per cent, as the Bank might eventually like, the houses could still live by making a turn one bills bought from the banks, held and sold on to the Bank of England, or by charging a commission on bills passed straight through. Theirs would become a pure broking operation-high volume, low margins, and neces-

market. If it lowers the rate This cosy system increasingly to earn an adequate reward. came under attack, but under Smith St Aubyn has unwittingly the Bank's new arrangements accomplished part of the the endowment effect still necessary shrinkage, and it is exists, if in a less prominent this consideration that explains form. For the Bank's operatible Bank's relictance to allow this consideration that explains tions to work smoothly, the any houses but those threatened with extinction to raise rights issue finance. Smith pulled in

less than £3m. But under the present rules, if the market's capital base to finance their bill books, those shrinks so does its capacity to banks which want their bills to serve the monetary system be eligible for rediscount at the since the size of a house's central bank are required to balance sheet is limited under hold an average 6 per cent of a crude but long standing pru-

This blunt instrument could easily be sharpened by allowing houses to hold a larger portfolio of low-risk assetsbeing calculated more as a func . tion of capital volatility than of credit standing. So a house that wanted to hold nothing but jets crast eligible bills could run a book of say, 40 times its capital base. Anyone tempted to invest in nothing but War Loan would be restricted to much less than 20

reached through which the dis-count market as a white could run a big enough bill book on a small enough capital base to satisfy both the needs of the money markets and the shareholders of the discount houses. . It is hard to see how else the Bank can reconcile its twin aims of keeping the market in existence and stripping it of all parasitical attributes. In these distributions, economies of scale would sorely force more mergers, and the demands of

houses could easily halve.

The Bank is trying to expose the discount market to the cold winds of evolution after decade spent basking on the Gala-pagos Islands. With luck, leathery and resilient institutions, capable of surviving in sarily lower costs.

The Bank's control over the emerge—the two biggest club money rate gives it direct influence over the return on capital employed in the discount empty beach.

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Weather

CLOUDY with rain in the West and North. Sunny in the East and centre. London, South East, Midlands, Central North and N.E. England. Bright or sunny, some fog clearing. Max. 9C (48F).

Mostly cloudy, some rain or drizzle, fog on coasts. Max, 11C (46F). Outlook: Mostly dry, apart from a little rain in the NW. Overnight fog clearing slowly, some night fog.

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the trade unions into industrial retaliation against the Governrelations legislation, or to pull out of the tripartite National Economic Development Council confidential paper circulated to unions ahead of Wed-

nesday's meeting of the TUC employment policy and organisation committee discloses that Congress House is taking a cautious view of militant proposals put up by major unions. But last night it looked as though there would be a revolt ment, now the Employment Act, against the mild strategy proposed in the TUC's 10-page document and that a majority of union leaders on the committee would insist on a tougher line

The main suggestion, from the General and Municipal Workers Union, is that the TUC should employer in that industry sues smaller firms. The scale of to rev a union for damages. This damages payable by unions once ments,

BY CHRISTIAN TYLER, LABOUR EDITOR THE TUC is unwilling to lead appears to have sufficient sup- their "corporate immunity" nort among other unions to be-

for the Transport Workers' de-NEDC, and its industrial sector working parties.

over Bill to curb union powers

put it on the statute book by predecessor from this Govern-

Tebbit, Employment Secretary. are expected. greatly increasing financial compensation for closed shop if it directed operations.
"victims" may be modified in It is also cautious ab

has been withdrawn by the come part of the TUC campaign But there is less consensus servative trade unionists mand that the TUC pull out of taken on the major question

The Government is expected to publish its Bill on trade Building union immunities and the closed ship in two weeks, and hopes to mid-summer. It will be called the Employment Bill, like its

Some minor changes to the Proposals for

legislation may also be changed to meet objections from Con-But no decision has yet been

whether to stiffen the proposal for making "union-only ders and contracts illegal. employers demanded that trade unions should lose their immunity from prosecution if workers go on strike to keep non-union labour

off building sites.
The TUC strategy document concentrates on public demonstrations rather than industrial retaliation, arguing that it is consultative document published not the TUC's job to decide in November by Mr Norman when strikes should begin and would become liable to suits for damages under the Tebbit Bill

Union, is that the TUC should "victims" may be modified in It is also cautious about a co-ordinate action by unions the light of objections from the GMWU suggestion that the TUC ecross whole industries if an CBI that they could bankrupt should boycott periodic ballots The scale of to review closed shop agree-

Tebbit predicts jobless over 3m

BY OUR POLITICAL CORRESPONDENT

MR NORMAN TEBBIT, the Employment Secretary, yesterday gave the firmest indication yet that the Government expects unemployment to exceed 3m this month. He said that a combination of the usual seasonal factors and the abnormally bad weather, meant that it was "extremely" likely unemployment would go over 3m in January.

He also, predicted that unemployment would go on rising through the first part of this year, but that the downward trend would be sufficiently well established by the next election to ensure victory for the Conservative

His warning came as MPs returned to London today for the start of a new term in which concern about unemployment is again likely to be

the over-riding issue. The Conservative Party has

been bracing itself for unemployment to reach 3m for several months, but even so the breaking of the 3m harrier is almost certain to increase the pressure from a very vocal section of its own backbenchers for re-flation. It may also have the effect

of helping to unite Labour MPs, who will be hoping to show that the accord reached between Labour and union leaders at Bishop's Stortford really did mark a turning point for the party.

Though in the short term
MPs may be preoccupied

with the rail dispute and the

effects of the weather, the

Budget on March 9 will be the

focal point of the new term. Increasingly, those Tories with doubts about the Govern-

ment's policies see it as the

one last chance of saving the next election for the Conser-

Over the next few weeks, the so-called "wets" both in-side and outside the Cabinet are expected to hold a series of private meetings in an attempt to co-ordinate an alternative strategy, probably involving a reflationary package of £2-3hn. Yesterday. London Weekend Television published an

opinion poll, carried out by

Opinion Research Centre

which Tory left-wingers are

likely to use in support of their argument for reflation. It showed that unemployment is regarded as the most important issue by 80 per cent of those voters who. while not intending to vote Conservative at the moment, say they might eventually be persuaded to do so.